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How to Build a Tabernacle

By
W. E. BIEDERWOLF
DON COLLINS
E. J. ROLLINGS

BROSTROM & BROTT'S *Architects*

61
1839

HOW TO BUILD A TABERNACLE

FOR UNION GOSPEL MEETINGS
AND ASSEMBLIES IN GENERAL

By

W. E. Biederwolf
Don Cochran
Elmer J. Rollings

Brostom and Drotts, *Architects*

*The only Book in print containing accurate Blue
Prints and proper Lumber Estimates for all
sizes of Tabernacles, doing away with the necessity,
both of an Advance Man, and of specially prepared
Blue Prints*

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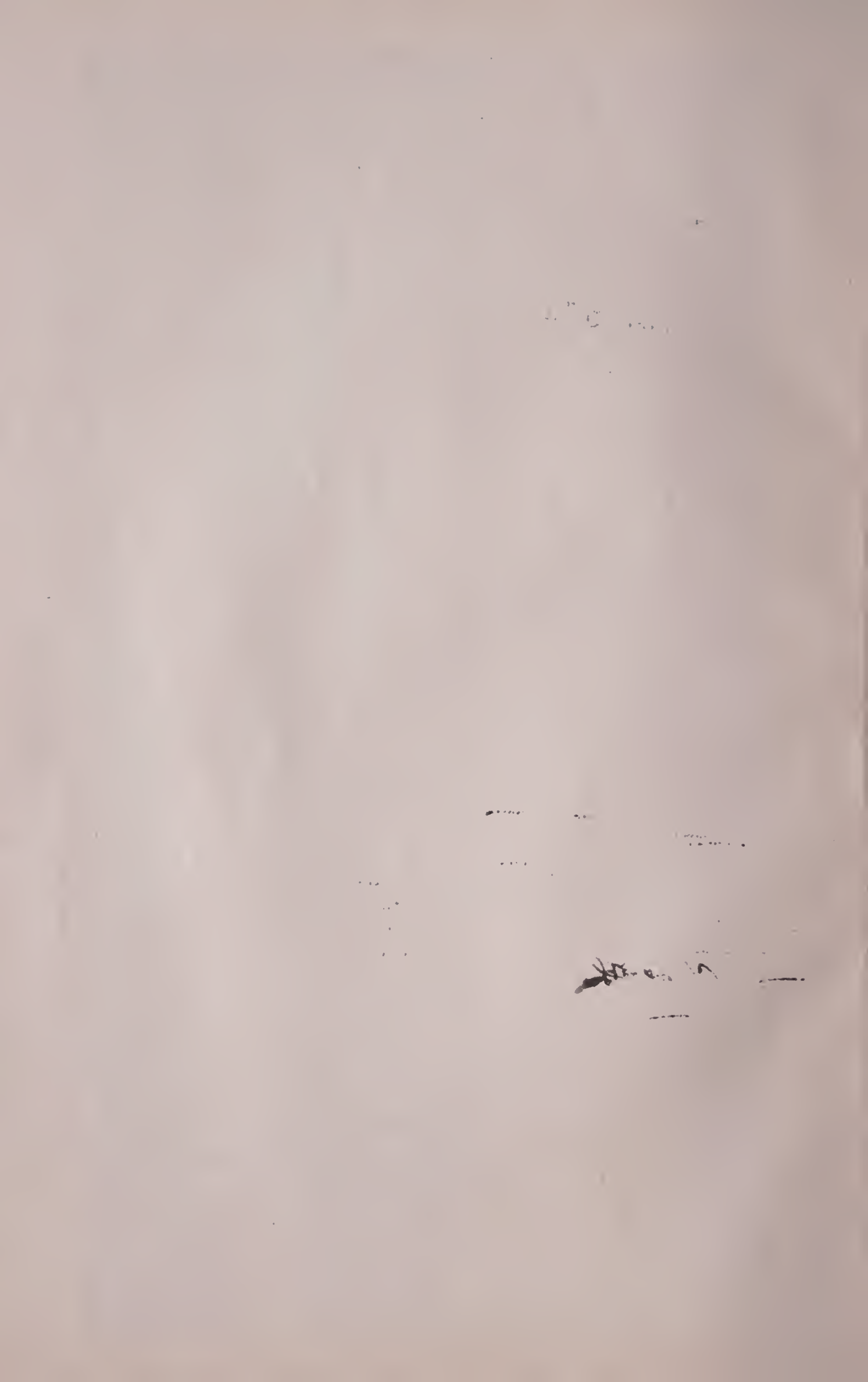
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no 1



THIS TABERNACLE WAS BUILT AT GRAND RAPIDS, MICH IN MARCH, 1917, BY DON COCHRAN
SIZE 164 BY 242



The Tabernacle

It is of greatest importance for the success of an evangelistic movement that the best possible place be obtained in which to hold the meetings. There are many reasons why other than Church buildings are best adapted to this purpose. Very rarely **is a Church building commodious enough** and it is a fact which it is useless to ignore that certain classes will be attracted to other places rather than to the Church.

The Opera House is a complete failure for evangelistic work. Poor light, poor heat, poor ventilation, poor acoustics, and absolutely no convenience for after-meeting work make this apparent. Tents cannot be used in winter with any satisfaction, and a tent meeting will suffer much in windy or stormy weather at any season of the year.

The best possible investment for a series of evangelistic meetings is a Tabernacle constructed especially for the purpose. It can be made comfortable in the severest winter weather. The cost does not exceed in any great measure the rent of a tent or opera house. The building itself is the greatest advertisement that can be made, while it lends a dignity to the undertaking that could not be secured in any other way.

The construction of the Tabernacle should be put in charge of a Building Committee, especially selected for this work. The Chairman of the Executive Committee should be also a member of this committee; in addition to him let three of your ablest business men be appointed.

There are several plans from which to choose in the construction of a Tabernacle.

1. The first and best plan is to rent the lumber of the local dealers and pay outright for what lumber is damaged. Lumber has been rented as low as \$3.00 per thousand feet and sometimes as high as \$12.00 per thousand, including hauling both ways. This all depends upon locality and market conditions.

2. A second plan is to purchase outright, at as low a figure as possible, the lumber, rubberoid for roofing, building paper, windows, etc., and at the close of the meeting, or as soon as the building is erected, advertise the lumber in the building for sale, or offer the Tabernacle for sale as it stands. If all the lumber and other material be purchased outright at a figure somewhere near the cost, and then is sold to the highest bidder at the close of the meeting, the loss is not very great.

3. The third plan, adopted by some, *but which we advise you by all means not to adopt*, is to bargain with a contractor for a definite price for putting up and taking down the Tabernacle and furnishing all material. Contractors usually name an exorbitant price, and this third plan will cost you more than twice the amount called for by the first one. The first plan is by far the best. Rent the lumber, hire one competent carpenter to oversee the construction, and put the building up by day labor, getting the same volunteered if possible. Carpenters say there is scarcely a piece of lumber used in the construction that they cannot make use of afterwards in regular building operations.

If either the first or second plan is followed, the cost of the Tabernacle will be affected very much by the price paid for labor. One Virginia town paid \$950.00 for labor, and another paid \$800.00, which are examples of needless expenditure. If one carpenter is secured and paid for overseeing the construction, *in many places enough volunteer labor can be secured without any cost whatever*. Anyone who can drive a nail or saw a board can be used. By all means secure as much volunteer labor as possible. Let the preachers take a hand in it and anybody who can give a little time. The labor on the Hamilton (Ohio) Tabernacle, seating 4,000 people, cost only \$78.00, while in Williamsport, Pa., for a Tabernacle seating 6,000 not a single dollar was expended for this purpose.

LOCATION

Endeavor to get a location for the building as near the center of the city as possible. Oftentimes the City Council or proper authorities will grant permission to close a street during the time of the meetings and the Tabernacle can thus be put anywhere in the heart of the city. If the Tabernacle be built on a corner lot, permission is often granted to extend it out over the two sidewalks. Such things are often done for street fairs and other secular enterprises, and why should not the same thing be done for the erection of a Gospel Tabernacle?

The size of the Tabernacle may be gauged by the following information :

		Lumber required :
76 x 112—seats	1,200.....	30,000 feet
84 x 126—seats	1,650.....	40,000 feet
84 x 154—seats	2,000.....	53,000 feet
114 x 140—seats	2,500.....	62,000 feet
114 x 182—seats	3,250.....	77,000 feet

126 x 196—seats	4,000.....	88,000 feet
126 x 224—seats	5,000.....	100,000 feet
152 x 224—seats	6,000.....	125,000 feet

These figures make ample allowance for aisles, provided the seats are made in the Tabernacle as per instructions. (See Figures Nos. 39, 40 and 41.)

BILLS OF MATERIAL

The following bills of material will show exactly the different kinds and sizes of lumber needed. From these can be estimated the material needed for buildings smaller or larger.

ESTIMATE FOR TABERNACLE AS PER BLUE PRINT FIGURE No. 1

76 x 112—CAPACITY 1,200				
Pieces				Feet
54	2 x 4 x 16	Center post material.....		576
18	2 x 6 x 16	Center post material.....		288
18	2 x 6 x 12	Center braces.....		216
9	2 x 8 x 24	Center tie beams.....		288
54	2 x 6 x 10	First row shed posts.....		540
48	2 x 10 x 14	Purlin plates.....		1,120
270	2 x 6 x 14	Rafters		3,780
200	2 x 4 x 8	Braces and studding.....		1,067
50	2 x 4 x 12	Braces and studding.....		400
50	2 x 4 x 16	Studding		533
		Sheathing		11,000
		Shiplap for sides and ends.....		6,000
PLATFORM				
20	2 x 6 x 14	Sills		280
28	2 x 8 x 10	Elevated platform sleepers.....		373
28	2 x 8 x 12	Level platform sleepers.....		448
84	2 x 8 x 36 x 0	Terraces		168
		Inch boards for floor.....		1,200
SEATS				
55	2 x 4 x 14	Seat runners or sills.....		513
52	2 x 10 x 12	Seat planks (dressed one side).....		1,040
52	2 x 10 x 16	Seat planks (dressed one side).....		1,386
52	1 x 8 x 12	Seat backs (dressed one side).....		416
52	1 x 8 x 16	Seat backs (dressed one side).....		554

312	1 x 4 x 36	Seat frame material.....	312
312	1 x 4 x 16	Seat frame material.....	138
286	2 x 4 x 14	Seat frame material.....	222
286	1 x 4 x 20	Seat frame material.....	80
208	1 x 4 x 36	Linear braces.....	208

Total feet. 33,228

ROOFING AND HARDWARE ESTIMATE

2 kegs 16d common nails 2 kegs 6d common nails
1 keg 8d common nails 30-lb. 3d common nails
8 pr. 6-in. heavy strap hinges
10 pr. 3-in. strap hinges, light
300 ft. heavy cord to operate windows
10 windows, 12-light, 8 x 10
110 rolls 1-ply rubberoid roofing
60 squares thread felt for sides
2500 4-ft. plaster lath

ESTIMATE FOR TABERNACLE AS PER BLUE PRINT FIGURE No. 14

84 x 126—CAPACITY 1,650

Pieces			Feet
20	2 x 6 x 14	Center post material.....	
60	2 x 4 x 14	Center post material.....	560
20	2 x 6 x 12	Center braces.....	240
10	2 x 8 x 24	Center tie beams.....	320
60	2 x 6 x 12	First row shed posts.....	720
36	2 x 10 x 14	Purlin plates.....	840
200	2 x 6 x 16	Rafters	3,200
100	2 x 6 x 14	Center rafters.....	1,400
200	2 x 4 x 8	Studding and braces.....	1,067
100	2 x 4 x 12	Studding and braces.....	800
50	2 x 4 x 16	Studding and braces.....	533
		Inch sheathing.....	14,000
		Shiplap for sides and ends.....	5,500

PLATFORM

30	2 x 8 x 20	Elevated sleepers.....	800
30	2 x 8 x 14	Level sleepers.....	560

28	2 x	6 x 16	Sills	448
180	2 x	8 x 38-in. x 0	Terraces	360
			Inch sheathing for floor.....	2,100

SEATS

55	2 x	4 x 16	Seat runners or sills.....	587
58	2 x	10 x 20	Seat planks (dressed one side).....	1,933
58	2 x	10 x 12	Seat planks (dressed one side).....	1,160
58	1 x	8 x 20	Seat backs (dressed one side).....	773
58	1 x	8 x 12	Seat backs (dressed one side).....	464
348	1 x	4 x 36-in.	Seat frame.....	348
348	1 x	4 x 16-in.	Seat frame.....	155
319	2 x	4 x 14-in.	Seat frame.....	248
319	1 x	4 x 20-in	Seat frame.....	89
174	1 x	4 x 36	Seat brace linear.....	174

Total feet, 39,511

ROOFING AND HARDWARE ESTIMATE

2 kegs	16d common nails	3 kegs	6d common nails
1 keg	8d common nails	50-lb.	3d common nails
	12 pr.	6-in.	strap hinges—heavy
	12 pr.	3-in.	strap hinges—light
	400 ft.	heavy cord	to operate windows
	12 windows,	12-light,	8 x 10
	140 rolls	1-ply rubberoid	roofing
	60 squares	thread felt	for sides
	3,000	4-ft.	plaster lath

ESTIMATE FOR TABERNACLE

84 x 154—CAPACITY 2,000

Pieces			Feet
72	2 x	4 x 16	Center post material..... 768
24	2 x	6 x 16	Center post material..... 384
24	2 x	6 x 12	Center braces..... 288
12	2 x	8 x 24	Center tie beams..... 384
260	2 x	6 x 16	Shed rafters..... 4,160
130	2 x	6 x 14	Center rafters..... 1,820
66	2 x	10 x 14	Purlin plates..... 1,540
44	2 x	6 x 12	Shed posts..... 528
250	2 x	4 x 8	Studding and braces..... 1,333
150	2 x	4 x 12	Studding and braces..... 1,200

100	2 x 4 x 10	Studding and braces.....	667
		Shiplap No. 2 siding.....	6,000
		Inch boards for sheathing.....	16,000

PLATFORM

(7 terraces 54 ft. long)

28	2 x 8 x 14	Level sleepers.....	523
56	2 x 8 x 12	Elevated sleepers.....	896
196	2 x 8 x 36-in. x 0	Terrace blocks.....	392
40	2 x 6 x 14	Sills	560
		Inch boards flooring.....	2,100

SEATS—38 Rows

75	2 x 4 x 16	Seat runners or sills.....	800
102	2 x 10 x 12	Seat planks (dressed one side).....	2,040
76	2 x 10 x 20	Seat planks (dressed one side).....	2,533
102	1 x 8 x 12	Seat backs (dressed one side).....	816
76	1 x 8 x 20	Seat backs (dressed one side).....	1,013
506	2 x 4 x 14	Seat frame.....	393
506	1 x 4 x 20	Seat frame.....	281
552	1 x 4 x 16	Seat frame.....	245
552	1 x 4 x 36	Seat frame.....	552

52,923

HARDWARE AND ROOFING

2 kegs	16d common nails	2 kegs	6d common nails
1 keg	8d common nails	30-lb.	3d common nails
	8 pr. 6-in. strap hinges—heavy		
	10 pr. 3-in. strap hinges—light		
	300 ft. heavy cord to operate windows		
	10 windows, 12-light, 8 x 10		
	160 rolls roofing, 1-ply		
	65 squares thread felt for sides		
	2,800 4-ft. plaster lath		

ESTIMATE FOR TABERNACLE

114 x 140—CAPACITY 2,500

Pieces			Feet
66	2 x 4 x 16	Center post material.....	704
22	2 x 6 x 16	Center post material.....	352
22	2 x 6 x 12	Center braces.....	264

11	2 x	8 x 24	Center tie beams.....	352
44	2 x	6 x 14	First row shed posts.....	616
44	2 x	6 x 12	Second row shed posts.....	528
60	2 x	10 x 14	Purlin plates.....	1,400
390	2 x	6 x 16	Shed rafters.....	6,240
130	2 x	6 x 14	Center rafters.....	1,820
300	2 x	4 x 8	Braces and studding.....	1,600
200	2 x	4 x 12	Braces and studding.....	1,600
150	2 x	4 x 16	Braces and studding.....	1,600
			Inch boards for sheathing.....	20,000
			No. 2 Shiplap siding.....	6,500

PLATFORM

(7 terraces, 84 ft. long)

43	2 x	8 x 14	Level sleepers.....	1,003
86	2 x	8 x 12	Elevated sleepers.....	1,376
60	2 x	6 x 16	Sills	960
301	2 x	8 x 36-in. x 6	Terrace blocks.....	602
			Inch boards for platform floor.....	3,500

SEATS

102	2 x	4 x 16	Seat sills or runners.....	1,088
106	2 x	10 x 12	Seat planks (dressed one side).....	2,120
68	2 x	10 x 16	Seat planks (dressed one side).....	1,814
68	2 x	10 x 14	Seat planks (dressed one side).....	1,587
10	2 x	10 x 10	Seat planks (dressed one side).....	167
106	1 x	8 x 12	Seat backs (dressed one side).....	848
68	1 x	8 x 16	Seat backs (dressed one side).....	726
68	1 x	8 x 14	Seat backs (dressed one side).....	635
10	1 x	8 x 10	Seat backs (dressed one side).....	67
698	2 x	4 x 14-in.	Seat blocks.....	543
698	1 x	4 x 20-in.	Seat blocks.....	388
756	1 x	4 x 16-in.	Seat blocks.....	336
756	1 x	4 x 36-in.	Seat blocks.....	756

Total feet, 62,082

HARDWARE AND ROOFING

3 kegs 16d common nails 3 kegs 6d common nails
2 kegs 8d common nails 40-lb. 3d common nails
16 pr. 6-in. strap hinges—heavy
20 pr. 3-in. strap hinges—light
400 ft. heavy cord to operate windows

15 windows, 12-light, 8 x 10
200 rolls rubberoid, 1-ply
70 squares thread felt for walls
4,000 4-ft. plaster lath

ESTIMATE FOR TABERNACLE AS PER FIGURE No. 25

114 x 182—CAPACITY 3,250			
Pieces			Feet
78	2 x 4 x 18	Center post material.....	936
26	2 x 6 x 18	Center post material.....	468
28	2 x 6 x 12	Center braces.....	336
14	2 x 8 x 24	Center tie beams.....	448
84	2 x 6 x 16	First row shed posts.....	1,260
84	2 x 6 x 14	Second row shed posts.....	1,092
78	2 x 10 x 14	Purlin plates.....	1,820
450	2 x 6 x 16	Rafters	7,200
150	2 x 6 x 14	Center rafters.....	2,100
450	2 x 4 x 8	Studding and braces.....	2,400
100	2 x 4 x 12	Studding and braces.....	800
100	2 x 4 x 16	Studding and braces.....	1,067
		Inch boards for sheathing.....	27,000
		Shiplap for sides.....	9,000

PLATFORM

66	2 x 6 x 16	Sills	1,056
90	2 x 8 x 16	Elevated sleepers.....	1,920
45	2 x 8 x 14	Level sleepers.....	840
450	2 x 8 x35-in x 0	Terrace blocks.....	900
		Inch boards.....	4,000

SEATS

136	2 x 10 x 16	Seat runners or sills.....	1,451
92	2 x 10 x 14	Seat planks (dressed one side).....	2,147
88	2 x 10 x 16	Seat planks (dressed one side).....	2,347
72	2 x 10 x 12	Seat planks (dressed one side).....	1,440
92	1 x 8 x 14	Seat backs (dressed one side).....	859
88	1 x 8 x 16	Seat backs (dressed one side).....	939
72	1 x 8 x 12	Seat backs (dressed one side).....	576
792	1 x 4 x 36-in.	Seat frames.....	792

792	1 x 4 x 16-in.	Seat frames.....	352
748	1 x 4 x 20-in.	Seat frames.....	208
748	2 x 4 x 14-in.	Seat frames.....	582
440	1 x 4 x 36-in.	Linear braces.....	440
10	2 x 10 x 10	Seat planks.....	167
10	1 x 8 x 10	Seat backs.....	67

Total feet, 76,805

ROOFING AND HARDWARE ESTIMATE

3 kegs	16d common nails	4 kegs	6d common nails
2 kegs	8d common nails	50-lb.	3d common nails
	260 rolls	1-ply	rubberoid
	4,000	4-ft.	plaster lath
	14	12-light	8 x 10 windows
	500 ft.	heavy cord	to operate windows
	14 pr.	3-in.	light strap hinges
	22 pr.	6-in.	heavy strap hinges

ESTIMATE FOR TABERNACLE

126 x 196—CAPACITY 4,000

Pieces			Feet
90	2 x 4 x 20	Center post material.....	1,200
30	2 x 6 x 20	Center post material.....	600
15	2 x 8 x 24	Center tie beams.....	480
30	2 x 6 x 12	Center braces.....	360
90	2 x 6 x 18	First row shed posts.....	1,530
90	2 x 6 x 16	Second row shed posts.....	1,350
112	2 x 10 x 14	Purlin plates.....	2,613
450	2 x 6 x 18	Shed rafters.....	8,100
150	2 x 6 x 14	Center rafters.....	2,100
400	2 x 4 x 8	Studding and braces.....	2,133
100	2 x 4 x 12	Studding and braces.....	800
150	2 x 4 x 16	Studding and braces.....	1,600
		Inch boards for sheathing.....	30,000
		Shiplap for siding.....	9,000

PLATFORM

60	2 x 6 x 16	Sills	960
49	2 x 8 x 16	Sleepers for level platform.....	1,045

98	2 x	8 x 18	Sleepers for elevated platform.....	2,352
600	1 x	6	Boards	600
550	2 x	8 x 36-in. x 0	Terrace blocks.....	1,100
			Inch boards for floor.....	5,000

SEATS

136	2 x	4 x 16	Seat runners or sills.....	1,451
188	2 x	10 x 18	Seat planks (dressed one side).....	5,640
84	2 x	10 x 12	Seat planks (dressed one side).....	1,680
10	2 x	10 x 10	Seat planks (dressed one side).....	167
188	1 x	8 x 18	Seat backs (dressed one side).....	2,256
84	1 x	8 x 12	Seat backs (dressed one side).....	672
10	1 x	8 x 10	Seat backs (dressed one side).....	67
850	1 x	4 x 36-in.	Seat frames.....	850
850	1 x	4 x 16-in.	Seat frames.....	378
800	1 x	4 x 20-in.	Seat frames.....	222
800	2 x	4 x 14-in.	Seat frames.....	622
470	1 x	4 x 36-in.	Seat frames.....	470

Total feet, 87,620

ROOFING AND HARDWARE ESTIMATE

- 300 rolls 1-ply rubberoid
- 5,500 4-ft. plaster lath
- 90 squares thread felt for sides
- 28 12-light, 8 x 10 windows
- 3 kegs 16d common nails
- 2 kegs 8d common nails
- 5 kegs 6d common nails
- 24 pr. 6-in. strap hinges—heavy
- 28 pr. 3-in. strap hinges—light
- 2,000 ft. heavy cord

ESTIMATE FOR TABERNACLE

126 x 224—CAPACITY 5,000

Pieces				Feet
102	2 x	4 x 20	Center posts.....	1,360
34	2 x	6 x 20	Center posts.....	680
17	2 x	8 x 24	Center tie beams.....	544
34	2 x	6 x 12	Center braces.....	408
102	2 x	6 x 18	First row shed posts.....	1,836
102	2 x	6 x 16	Second row shed posts.....	1,632

138	2 x 10 x 14	Purlin plates.....	3,680
510	2 x 6 x 18	Shed rafters.....	9,180
170	2 x 6 x 14	Center rafters.....	2,380
430	2 x 4 x 8	Studding and braces.....	2,293
225	2 x 4 x 10	Studding and braces.....	1,500
150	2 x 4 x 12	Studding and braces.....	1,200
275	2 x 4 x 16	Studding and seat runners or sills....	2,933
		Inch boards for sheathing.....	35,000
		No. 2 Shiplap.....	11,000

SEATS

232	2 x 10 x 18	Seat planks (dressed one side).....	6,960
106	2 x 10 x 12	Seat planks (dressed one side).....	2,120
10	2 x 10 x 10	Seat planks (dressed one side).....	167
232	1 x 8 x 18	Seat backs (dressed one side).....	2,784
106	1 x 8 x 12	Seat backs (dressed one side).....	848
10	1 x 8 x 10	Seat backs (dressed one side).....	67
986	2 x 4 x 14-in.	Seat frames.....	767
986	1 x 4 x 20-in.	Seat frames.....	274
1044	1 x 4 x 16-in.	Seat frames.....	475
1044	1 x 4 x 36-in.	Seat frames.....	1,044
792	1 x 4 x 36-in.	Linear braces.....	792

PLATFORM

(49 x 96—11 terraces)

60	2 x 6 x 16	Sills	960
49	2 x 8 x 16	Sleepers for level platform.....	1,045
98	2 x 8 x 18	Sleepers for elevated platform.....	2,352
550	2 x 8 x 36-in. x 0	Terrace blocks.....	1,100
		Inch boards 8-in. and 10-in. wide.....	5,000
		Inch boards 6-in. wide.....	600

Total feet, 104,459

ROOFING AND HARDWARE ESTIMATE

110 squares thread felt for sides
350 rolls 1-ply rubberoid
7,000 4-ft. plaster lath
75 lbs. 3d common nails
4 kegs 16d common nails

3 kegs 8d common nails
 6 kegs 6d common nails
 24 pr. 6-in. strap hinges—heavy
 50 pr. 3-in. strap hinges—light
 2,000 ft. heavy cord to operate windows
 32 windows, 12-light, 8 x 10

ESTIMATE FOR TABERNACLE

152 x 224—CAPACITY 6,000

102	2 x	4 x 20	Center posts.....	1,360
34	2 x	6 x 20	Center posts.....	680
34	2 x	6 x 12	Center braces.....	408
17	2 x	8 x 24	Center tie beams.....	544
102	2 x	6 x 18	First row shed posts.....	1,836
102	2 x	6 x 18	Second row shed posts.....	1,632
102	2 x	6 x 14	Third row shed posts.....	1,428
160	2 x	10 x 14	Purlin plates.....	3,733
510	2 x	6 x 18	Shed rafters.....	9,180
170	2 x	6 x 14	Center rafters.....	2,380
170	2 x	6 x 14	Shed rafters.....	2,380
430	2 x	4 x 8	Studding and braces.....	2,293
225	2 x	4 x 10	Studding and braces.....	1,500
150	2 x	4 x 12	Studding and braces.....	1,200
350	2 x	4 x 16	Studding and seat runners or sills....	3,733
			Inch boards for sheathing.....	47,000
			No. 2 shiplap siding.....	12,000

SEATS

232	2 x	10 x 18	Seat planks (dressed).....	6,960
222	2 x	10 x 12	Seat planks (dressed).....	4,440
10	2 x	10 x 10	Seat planks (dressed).....	167
232	1 x	8 x 18	Seat backs (dressed).....	2,784
222	1 x	8 x 12	Seat backs (dressed).....	1,776
10	1 x	8 x 10	Seat backs (dressed).....	67
1336	2 x	4 x 14-in.	Seat frames.....	1,073
1336	1 x	4 x 20-in.	Seat frames.....	767
1380	1 x	4 x 36-in.	Seat frames.....	1,380
1380	1 x	4 x 16	Seat frames.....	613

PLATFORM

60	2 x	6 x 16	Sills	960
49	2 x	8 x 16	Sleepers for level platform.....	1,045

98	2 x 8 x 18	Sleepers for elevated platform.....	2,352
550	2 x 8 x 36-in. x 0	Terrace blocks.....	1,100
		Inch boards 8 and 10-in. wide.....	5,000
		Inch boards 6 inches wide.....	600

Total feet, 124,371

ROOFING HARDWARE ESTIMATE

120	squares	thread felt for sides
400	rolls	1-ply rubberoid for roof
8000	4-ft.	plaster lath
75	lbs.	3d common nails
5	kegs	16d common nails
4	kegs	8d common nails
7	kegs	6d common nails
28	pr.	6-in. strap hinges—heavy
50	pr.	3-in. strap hinges—light
2000	ft.	heavy cord to operate windows
32	windows,	12-light, 8 x 10

HEIGHT OF BUILDING

The side-walls of a summer Tabernacle should be 10 feet high, while for winter Tabernacle the side-walls should be 8 feet high. The comb of the roof should be 6 feet higher than the top of the center tie-beam.

UPRIGHT SUPPORTS

The upright supports for the two center rows for all Tabernacles should be 6 x 6 and made as in Figure 20A. In dormer window type of Tabernacles these supports should be 14 feet high for a seating capacity of 1,650; 16 feet high for a seating capacity of 2,000 or 2,500; 18 feet high for a seating capacity of 3,250; and 20 feet high for a seating capacity of 4,000 to 6,000. The center posts for a clear-story type of Tabernacle must in each case be higher than those for the dormer window type. See Figure 4 where a seating capacity of only 1,200 requires 16 feet posts.

For the other upright supports in summer Tabernacles use two 2 x 6 pieces; and for winter Tabernacles where heavy snows may be expected use three 2 x 6 pieces put together as in Figures 8, 13 and 21.

The upright supports should be placed not more than 14 feet apart, and the plates, or purlins, connecting them, upon which the rafters are to rest, should be 2 x 10s, and these should be spiked securely in the place left in the top of the upright supports. The roof over the center section should be put on after the other part of the roof is finished.

Under no circumstances allow a row of supports or an aisle to be placed down through the middle of the building.

There should be as many other rows of upright supports as may be needed to support the roof. One row on either side of the center section is sufficient for the ordinary sized Tabernacle. These of course should be of such height as to give proper slant to the roof. A number of these can be raised at one time after the 2 x 10 rafter supports are nailed on.

For the side-walls 2 x 4 upright supports are strong enough, and should be spaced to fit rafters (see rafter instructions). For the rafter support purlins on the uprights for the sides of the Tabernacle 2 x 4s should be used as in Figure 10.

BRACING

Any carpenter can properly brace a building, but keep the braces as high as possible, so as not to obstruct the view from the platform. (See Figures 12 and 19 for splendid examples of bracing.)

RAFTERS

For rafters use 2 x 6 material of the proper length; place them approximately three feet apart, nailing one against each of the upright supports. Those coming between the upright supports will have to be "toe-nailed"! It is more practical, although taking a little more lumber, to place the rafters two feet apart, inasmuch as sheathing comes in even lengths. When rafters are placed three feet apart the sheathing can be put on in sections by placing extra rafters to accommodate sheathing when it does not match on regular rafters.

For the roof, sides and ends of the building, use common inch lumber; run the sheathing lengthwise of the building, and the sides and ends horizontally, and not up and down. The opening at the eaves may be closed up by placing short pieces of 1 x 8 between the rafter ends (Figure 22), or by boxing the rafter ends with two pieces of 1 x 6, one running along the end

of the rafters and the other running underneath (Fig. 9), or by making the rafters flush with the side of the Tabernacle and running the siding tight up against the sheathing (Fig. 10). This last arrangement is by far the best of the three, and if used *the eave extension and bracket may be omitted*, in which case the lower sheathing board should be allowed to project *as far as possible* over the side in order to drop the water away from the building.

DOORS

Under no circumstances should a public entrance to the building be placed in the same end of the building as the platform. A small door for the entrance of the chorus and the workers and for other purposes may be placed here. For the main entrances put doors at the end of each aisle, opposite the platform. It is well to make double doors at the end of each of the two main aisles, 6 feet by 7 feet, opening out and with a removable center post. Put one large single door for exit only on each side of the Tabernacle, not more than half way towards the platform. In large Tabernacles two such doors on either side would be proper. All doors should swing outward. Some State Laws require an exit at the end of each aisle.

WINDOWS

There should be a number of windows on each side made in the center section of the roof. Make them dormer style as shown in Figures 19 and 24. Do not place any of these windows so as to cause a draft over the speakers' platform. These windows should be hinged at the bottom, swinging inward, and should be operated by ropes. In summer there should be several windows in each side of the building. These windows should be put in horizontally, high enough to prevent a view from the outside, and should, of course, be movable. In winter have dormer windows only. See Figure 24.

FLOOR

No floor is to be put in the Tabernacle. The ground should be covered with a heavy layer of shavings, sawdust or straw. The shavings are by far the most desirable. This is much superior to a building with a floor, for no matter how great the crowds, it is noiseless, and in cold weather warmer for the feet. About 10,000 pounds of shavings are sufficient for a 2,000 Tabernacle.

COVERING FOR ROOF AND SIDES

The roof is one of the most important parts of the building, and extreme care should be taken in its construction. It should be covered with 1-ply rubberoid. Place this roofing lengthwise of the building, and lay it well, like shingles, and it will shed water. *Never under any circumstances run the paper from the eaves to the comb.* Use lath and 3d nails to hold this roofing down; they are easier removed than the nails alone, and avoid tearing the paper. Run the lath on the roof from the eaves to the comb, *i. e.*, opposite in direction to the paper. Place the rows of lath about 18 inches apart.

In winter, the building should be covered on the outside with a cheap quality of tarred paper, and in extremely cold weather lined on the inside with building paper.

SEATING

The best plan ever devised for building seats in a tabernacle is illustrated by Figure 41. Determine the length of seats necessary for the width of tabernacle to be seated. Then lay the 2 x 4 runner flat wise on the ground; using three to each section of seats. Place one in the center and the two at either end *one foot* from the end of the seat plank. *When the seats are thus properly made they require no linear bracing aside from the seat plank and the back.* The frames for the seat ends should be made at a work bench over a pattern so they will be uniform.

Have the solid section of seats immediately in front of the pulpit, leaving a space of 10 feet between the front seat and the platform. Make an aisle 4 feet wide running back from the front in the center to a depth of six or seven seats. See Figure 25. At the rear of the middle section, leave a space of eight feet between the last seat and the wall and at the rear of the side sections leave a space of six feet. The seats in the side sections may be placed slightly diagonal so as to command a better view of the pulpit.

Nail the 2 x 10 seat planks down at each frame, using two 16d nails in each instance, one down into the 2 x 4 upright and the other into the 1 x 4 at rear.

It is not wise to make any of the sections of seats more than 24 feet in width.

AISLES

The two main aisles should be five feet wide each, and the others should be four feet wide, save the ones next to the wall, where three feet is sufficient. Some State Laws require a cross-aisle running through the center section to the sides about midway in the building.

Notice the blind aisle in the front of the center section of seats in Figure 25; this should really be placed in all tabernacles as it presents an easy method of caring for those who come front at the evangelist's invitation.

HEATING

The average Tabernacle can be made comfortable in the coldest weather by 8 large stoves burning coal or gas. The stove pipes must be equipped with dampers. If coal is used, be sure to run the pipes high enough above the roof to get sufficient draft. If the Tabernacle seats from 3,000 to 5,000, eight or ten stoves will be required in cold weather. Old furnaces can be used even to better advantage. If gas stoves are used, they must also be equipped with flues.

LIGHTING

Ask some lighting company to donate or to furnish at as low a figure as possible the wiring and lighting of the building.

The Tabernacle cannot be too light. If the Tabernacle is to be lighted by electricity, and it ought to be, use plenty of nitrogen lamps. **DO NOT USE ARCS.** Have the lights for the audience on as many circuits as may be necessary. This must be determined by the number of lights used. There should be at least two rows of lights for the chorus, extending the entire length of the platform. These should be on a separate circuit. Have a cluster of lights over the pulpit, but high enough not to blind those in the audience who will want to see the face of the speaker. This cluster must be on a separate circuit in case it is desired to turn off the chorus lights during the preaching. But what is better is to *have frosted bulbs for the chorus lights* and leave them on during the whole service, in which case the circuit for the cluster may be the same as that for the chorus lights. There should be a light outside for each entrance. The switch for the lights should be at the platform end, near the chorus entrance. The best place for it is in the custodian's room.

DECORATION

This is usually put in charge of a separate committee, who secure flags, bunting, etc., which they can make use of in almost unlimited quantities. Much of this material is usually loaned or donated. A strong pulpit is to be provided, and a rug for the pulpit platform.

THE CHORUS AND PULPIT PLATFORM

(See Figures 32, 33, 34, 35, 36, 37 and 38)

Erect the chorus and pulpit platform across the end of the Tabernacle. The platform for a Tabernacle seating 3,000 should be about 64 feet wide, and about 30 feet deep, on the basis of seven terraces for the singers; but on the basis of nine terraces for the singers the platform should be 56 feet wide and about 36 feet deep. For each additional 1,000 people the Tabernacle will seat, the platform should be 20 feet wider, on the basis of seven terraces for the singers, and 14 feet wider on the basis of nine terraces for the singers. It takes 2 linear feet of terrace for each person, and this estimate allows for the necessary aisle.

The dimensions used must be governed by the width of the Tabernacle and the height of the roof. The low roof may be avoided somewhat by the building of a middle section of the platform, and then the two wings on the diagonal, giving somewhat of a circular effect to the platform. This is the best for many reasons. See Figure 25.

On the basis of 64 feet by 30 feet, the center section may be 40 feet wide, and the wings 12 feet wide each, or the center section 32 feet wide and the wings 16 feet wide each.

On the basis of 56 feet by 36 feet, the center section may be 32 feet wide, and the wings each 12 feet wide.

In the construction of the platform begin by slanting 2 x 8 planks from the proper height at the proper angle at the rear wall toward the ground. These should be placed 2 feet apart. On these should be built the terraces, 8 inches or even better, 10 inches high, and the platform out of boards one inch thick. The lower level of the platform should be 2 feet high. In the center of the lower level erect another platform for the pulpit, making it 10 feet long, and 6 or 8 feet wide, and in height to suit the size of the Tabernacle. For a Tabernacle seating 3,000, the pulpit platform should be three feet above the lower level,

making it five feet in all, but for each additional thousand of seating capacity, make the pulpit platform one foot higher, not, however, to exceed seven feet under any circumstances. Steps should be provided at each end of the large platform.

There should be a running board projecting out in front of the pulpit platform, about two feet from the ground, upon which the speaker can stand in shaking hands with those who come to the front. This should be made of two planks 2 x 8 and about 8 feet long, and some means of approach should be made to it from the speakers' platform. See Figure 35A.

CUSTODIAN'S ROOM

In one corner of the Tabernacle just at the end of the chorus platform, partition off a room of considerable dimensions, for the custodian. Lay a few 2 x 4s on the ground, and put a floor made out of ordinary boards on them. Provide rug, bedding, dresser, small stove, etc., for the room.

EXPLANATION OF DRAWINGS COMMENCING ON PAGE TWENTY-FOUR

FIG. 1. Showing ground-floor plan of Tabernacle seating 1,200 people; dimensions 76 x 112. The center seats are 24 feet long, for which 2 x 10s 12 feet long are placed end to end. For detailed drawing of Choir Platform (54 feet wide) see Fig. 33.

FIG. 2. Showing end-elevation of Clearstory type building. Note double doors with removable center posts.

FIG. 3. Showing portion of side elevation of Clearstory type of building. The number of windows and ventilators will vary according to weather.

FIG. 4. Showing cross-section of Clearstory type of building.

FIG. 5. Showing the Center bent. The distance from the Purlin or plate supporting the rafters for the lower roof to the top of the Clearstory will vary to suit the window sash obtainable.

FIG. 6. Showing a section through one of the side-bents. Construction of center-bent post shown in Fig. 23, of side-bent post in Fig. 13. Side-wall construction shown in Figs. 9, 10 and 22.

- FIG. 7. Showing Center-bent post of Clearstory building with Purlin, Tie-beam, and Rafters fitting into place.
- FIG. 8. Showing Side-bent post with Purlin and Rafter in place.
- FIG. 9. Showing one plan of Side-wall construction.
- FIG. 10. Showing the most practical plan of closing up the eaves.
- FIG. 11. Showing end-wall construction looking across the building with 2 x 4 studding fitting outside 2 x 6 rafter.
- FIG. 12. Showing section of frame-work looking across the building toward the eaves. The Purlin rests in constructed side-bent post. See Fig. 13, d.
- FIG. 13. Showing construction of Side-bent posts built from three 2 x 6s spiked together as shown in drawings c and d. In smaller buildings two 2 x 6s are sufficient for side-bent posts as shown in drawings a and b.
- FIG. 14. Showing ground-floor plan of Tabernacle seating 1,650 people; dimensions 84 x 126. The center seats are 24 feet long, for which 2 x 10s 12 feet long are placed end to end. For detailed drawing of Choir Platform (54 feet wide) see Fig. 33.
- FIG. 15. Showing end-elevation of dormer-window type of building, with position of windows and doors. No windows are needed here.
- FIG. 16. Showing portion of side-elevation of dormer type building. The number of windows needed will vary according to weather.
- FIG. 17. Showing cross-section of dormer-window type building.
- FIG. 18. Showing section through side-bent. The construction of center-bent posts is shown in Fig. 23, of side-bent posts in Fig. 13. The side-wall construction is shown in Figs. 9, 10 and 22.
- FIG. 19. Showing center-bent with dormer window construction. The center-bent is 24 feet wide, for which one 2 x 8 x 24 is used as a tie-beam. Notice dimensions of rafters, braces and center-posts.
- FIG. 20. Showing center-bent post with rafters, tie-beam, purlin, dormer and rafter-brace fitting into place. Height of dormer made to suit window-sash obtainable.

FIG. 20a. Showing purpose of constructed center-post with purlin and tie-beam fitting into place. The constructed center-post is by all means the best post. Not only is it cheaper, but it is stronger, and it gives a resting place for the tie-beam and the purlin, thereby taking the strain off the spikes. Its salvage value is also greater because a 2 x 6 or a 2 x 4 is more salable than a 6 x 6 or a 6 x 8.

FIG. 21. Showing the side-bent post with purlin and rafter fitting into place. The purlin for the side-bent posts should rest preferably in the center of the post or on the side of the post *toward* the center of the building, as this will be found more convenient in construction and counteracts the pressure from the rafters.

FIG. 21a. Showing purlin in place in side-bent post, the space between the ends of the purlin is left to counterbalance the same space made necessary by tie-beam in center-bent posts.

FIG. 22. Showing side-wall construction. The eaves should be closed up with 8-inch boxing, cut in appropriate lengths. If the rafters are shortened and made flush with the 2 x 4 uprights, as in Fig. 10, the boxing boards can be run clear up to the sheathing and thus close the eave opening without cutting the boxing board. In this case the last or lowest sheathing board should be especially wide and allowed to project in order to drop the rain as far as possible from the side of the building, or an extension with bracket may be used as in Figure 10.

FIG. 23. Showing the construction of the top of center-bent post. Three 2 x 4s are nailed together as shown in Fig. 23c, dropping the center one 8 inches to allow rest for center-bent tie-beam. A 2 x 6 is then spiked on as in Fig. 23a 14 inches from the top to allow rest for purlin and clearance for rafters. See also Figs. 20 and 20a.

FIG. 24. Showing details of window construction, applying to both Dormer and Clearstory type of building. Use any size window obtainable, but the most practical sash is a six-light 8 x 10. The hinged window is by all means the most satisfactory and is as a rule more easily obtained. If this style of window is used, always put the hinges at the bottom of the sash and never at the top; otherwise on a rainy day they will have to be kept closed, cutting off all ventilation.

- FIG. 25. Showing ground-floor plan of Tabernacle seating 3,250 people; dimensions 114 x 182. The center seats are 24 feet long, for which 2 x 10s 12 feet long are placed end to end. For detailed drawing of Choir Platform (84 feet wide) see Fig. 34.
- FIG. 26. Showing end elevation Dormer type of building with position of windows and doors. Windows in the entrance end of the building are really unnecessary.
- FIG. 27. Showing portion of side-elevation of Dormer type building. Oftentimes along the sides there are no windows at all, when plenty of light and ventilation comes through the dormer windows.
- FIG. 28. Showing transverse section of Dormer type building.
- FIG. 29. Showing cross-section of Tabernacle seating 3,500 or more, with both Dormer and Clearstory type of windows. This type of construction is found more desirable for larger Tabernacles because of better ventilating facilities and added space in height for Choir Platform.
- FIG. 30. Showing outside view of Clearstory type of window.
- FIG. 31. Showing outside view of Dormer style of window.
- FIG. 32. Showing a three-terraced platform for small tabernacles. This platform will seat about 110 singers.
- FIG. 33. Showing a six-terraced platform for use in tabernacles of from 1,250 to 2,500 seating capacity. This platform will seat about 225 singers.
- FIG. 34. Showing a ten-terraced platform for use in Tabernacles of from 3,000 to 4,000 seating capacity. This platform will seat about 600 singers.

NOTE:—The above platforms may all be made smaller or larger as desired, by cutting off or adding terraces, which may be done by any carpenter or practical builder. If the system of bracing as shown in the drawings is followed the platform will be absolutely safe. More bracing than is shown here would be only a waste of lumber and less would not be entirely safe.

On each of the above platforms space is left between the pulpit platform and the first row of choir seats for a Grand Piano, as this is usually where the Musical Director will want it.

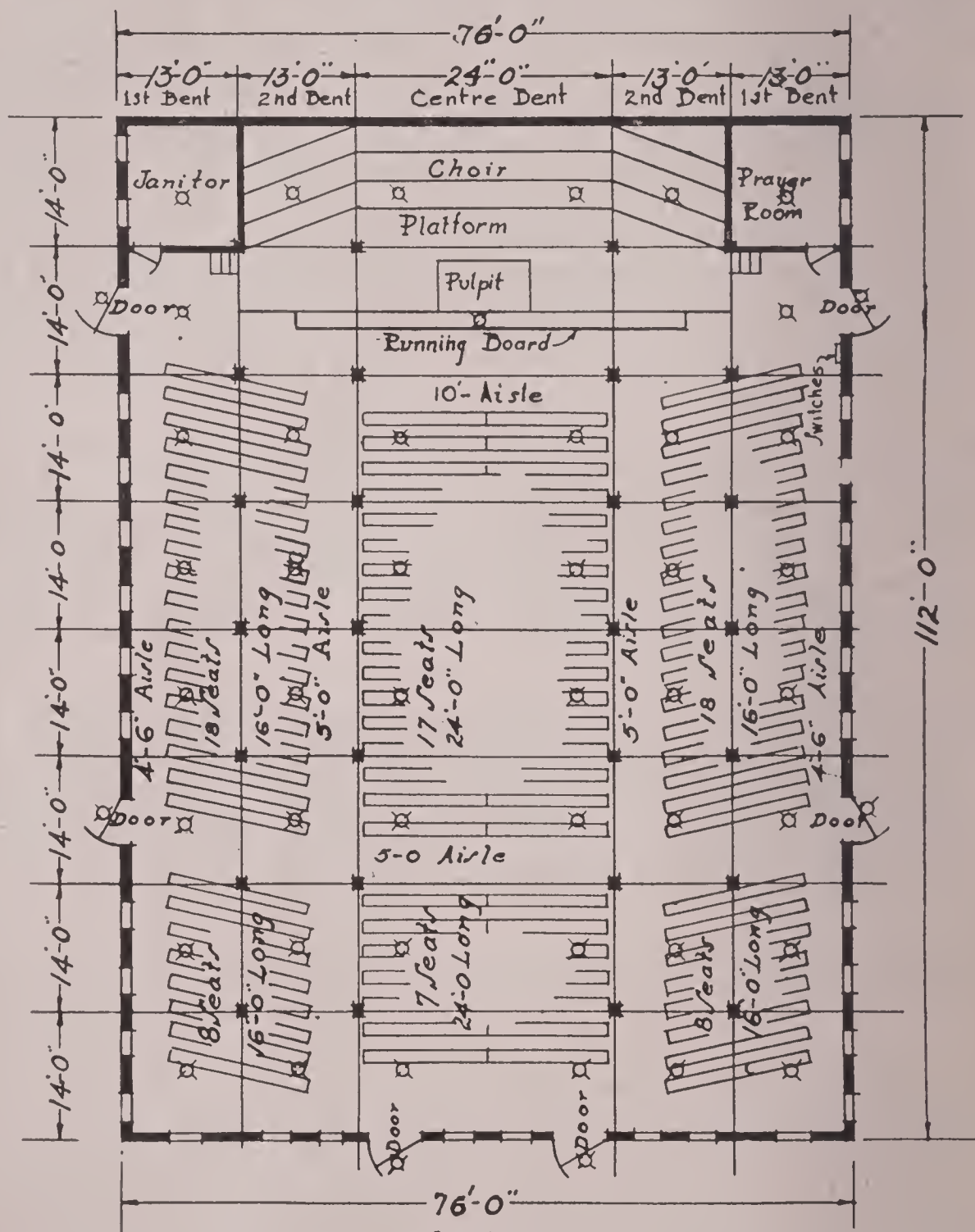
FIG. 35 (a and b). Showing very clearly the dimensions of all lumber required in the construction of the platform, stringers, posts, braces, terrace risers and flooring.

FIG. 36. ' Showing half section of circular style of choir platform. This plan of platform is somewhat more difficult to construct and is somewhat more expensive, but choristers usually prefer it. The two stairways on the sides for exit may be omitted, inasmuch as the two rear stairways and the middle entrance way furnish ample provision for exit under any and all circumstances. The dimensions of the platform as shown in the drawing are for a Tabernacle seating 5000 or more, and must be reduced or enlarged as the seating capacity may require.

FIG. 37. Showing cross section of platform as drawn in Fig. 39.

FIG. 38. Showing the framework and construction of speaker's platform. The level platform is as a rule of the same height in all Tabernacles, while the speaker's platform is elevated according to the size of the Tabernacle or the speaker's wishes in the matter.

FIGS. 39, 40 and 41. Showing construction of seats. Fig. 41 is by far the best type of seat. The type shown in Fig. 39 cannot be used without special permission of Fire Inspector. It is not necessary to use linear bracing, as shown in Fig. 41, when the ground is reasonably level.



PLAN
1200 Seating Capacity FIG. 1
⊠ Electric light

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TABERNACLE 1200

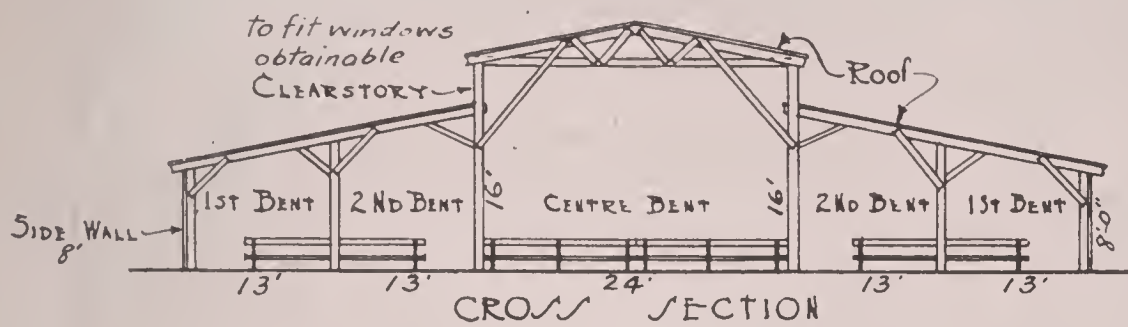
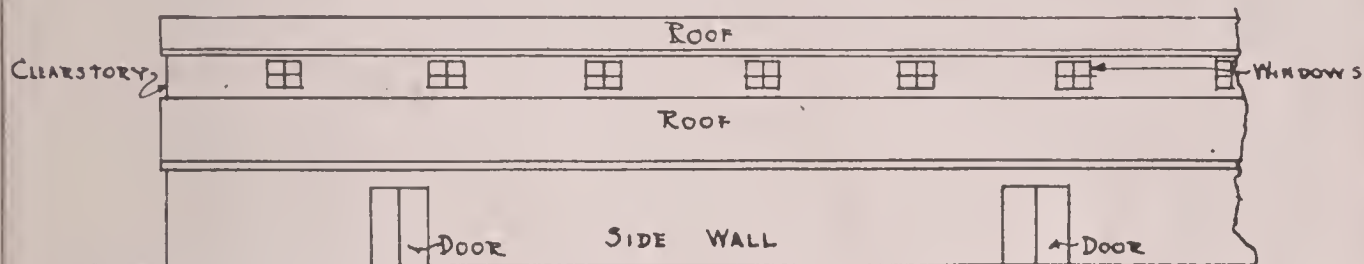
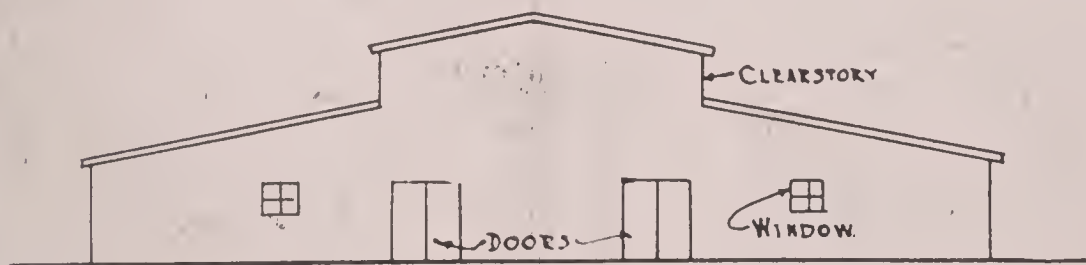


FIG.4



PORTION OF SIDE ELEVATION

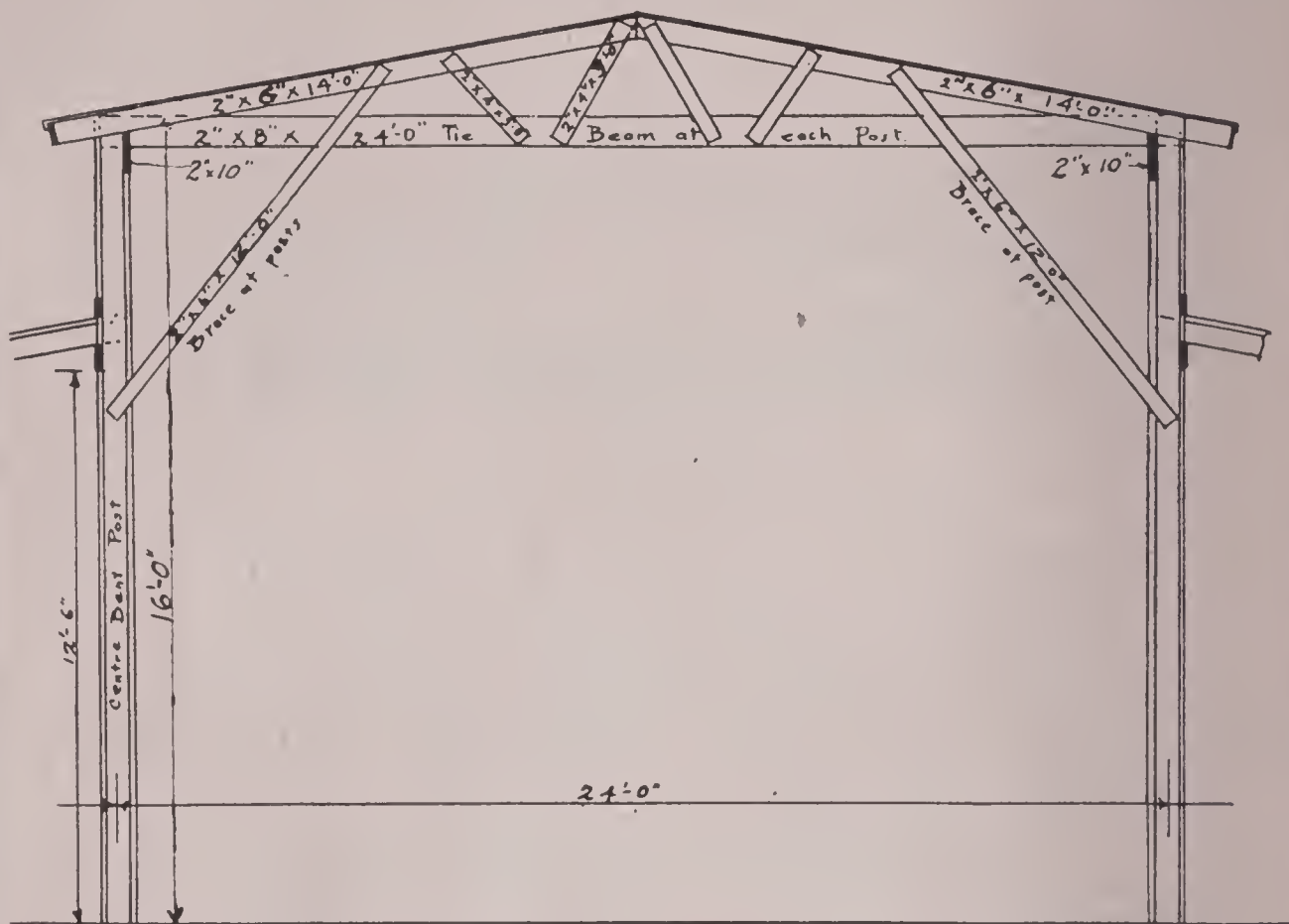
FIG.3



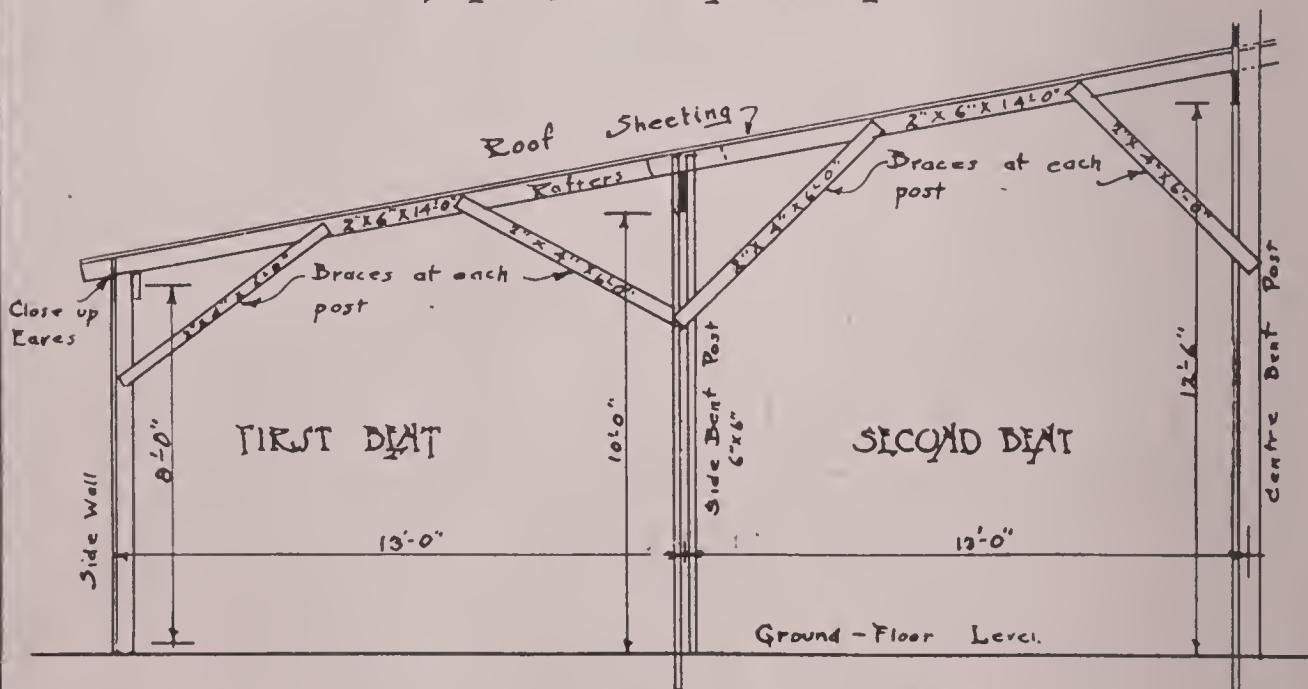
END ELEVATION

FIG.2

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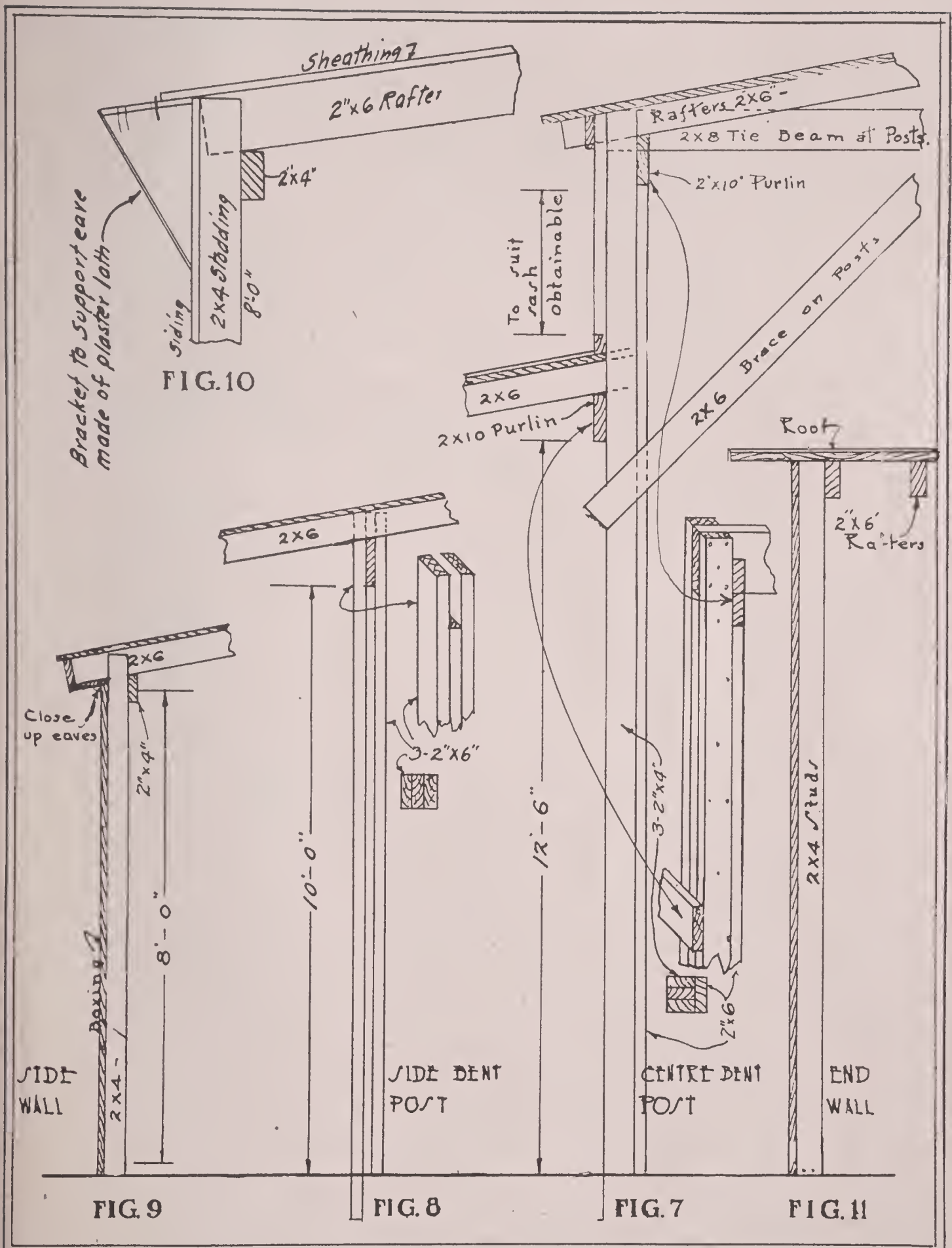


DETAILED SECTION THRU CENTRE BEAM FIG. 5.

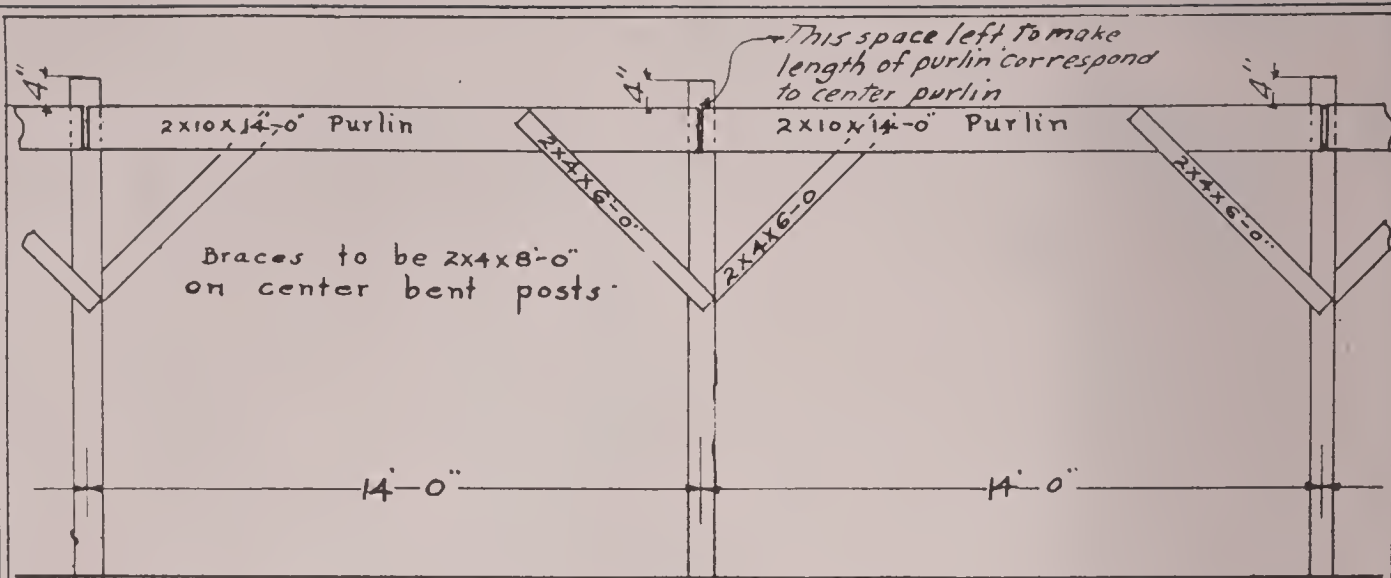


DETAILED SECTION THRU SIDE BENTS FIG. 6

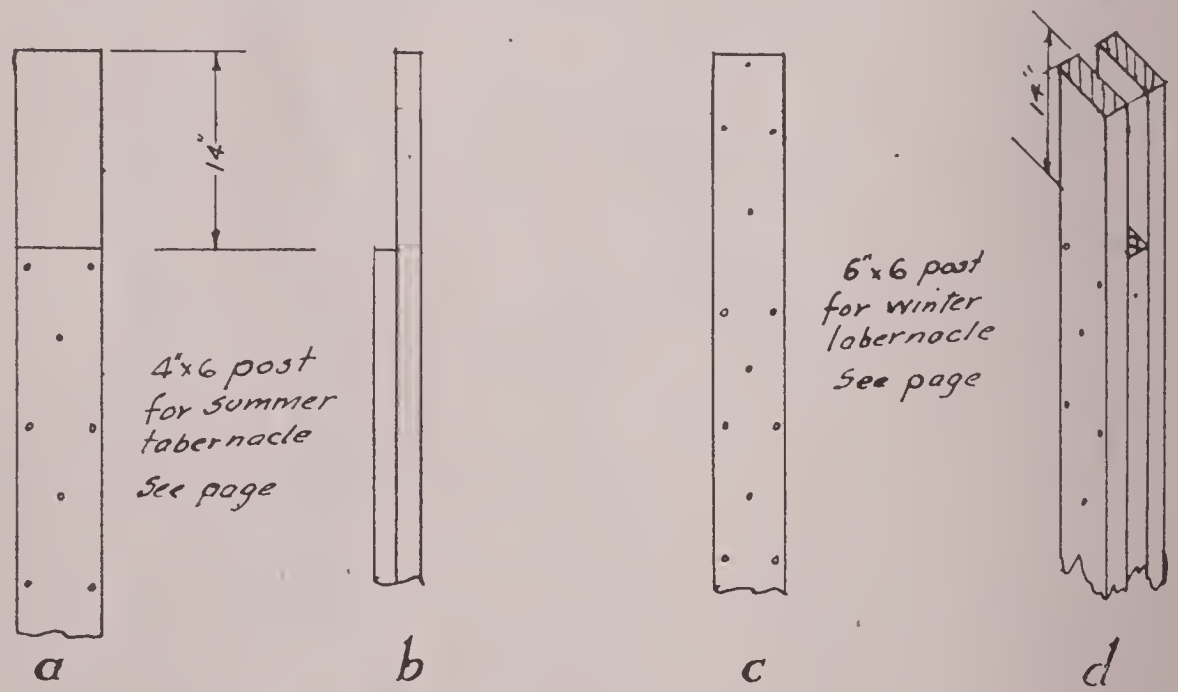
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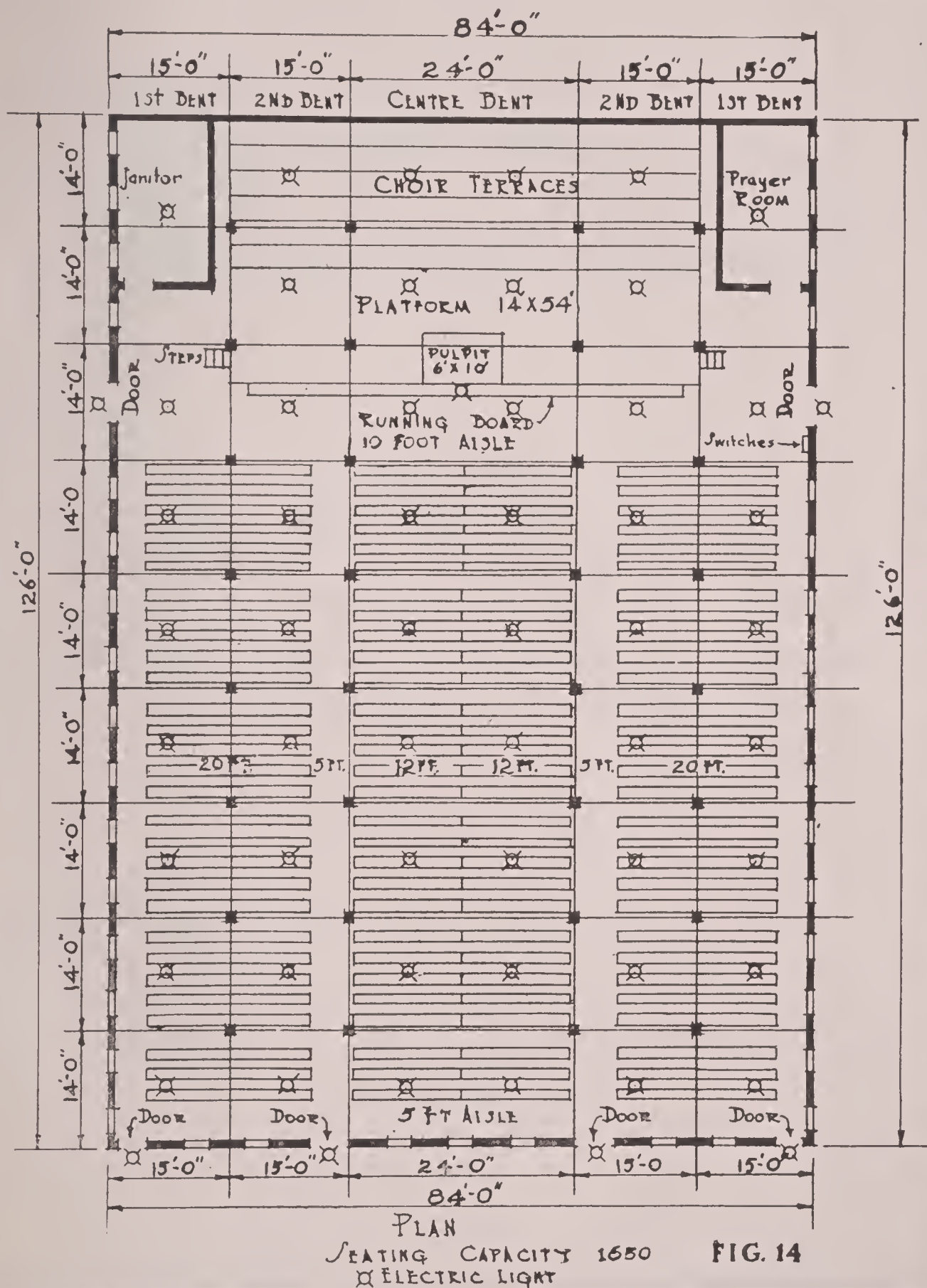
BROSTROM & DROTTS - ARCHITECTS
 RELIANCE BLDG KANSAS CITY, MO. TABERNACLE 1200



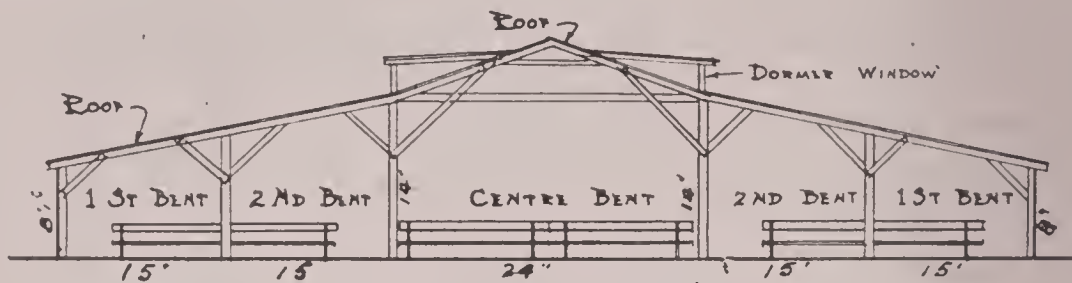
SECTION OF FRAMEWORK LOOKING TOWARD EAVES
FIG. 12



TOP OF SIDE BENT POST
FIG. 13.

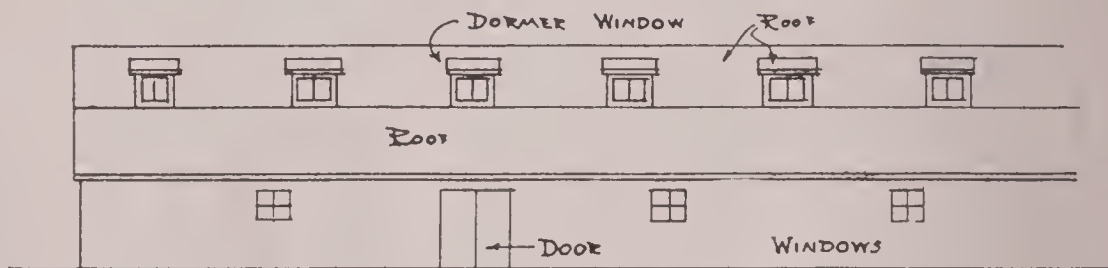


BROSTROM & DROTTS - ARCHITECTS TABERNACLE 1650
 RELIANCE BLD'G KANSAS CITY MO.



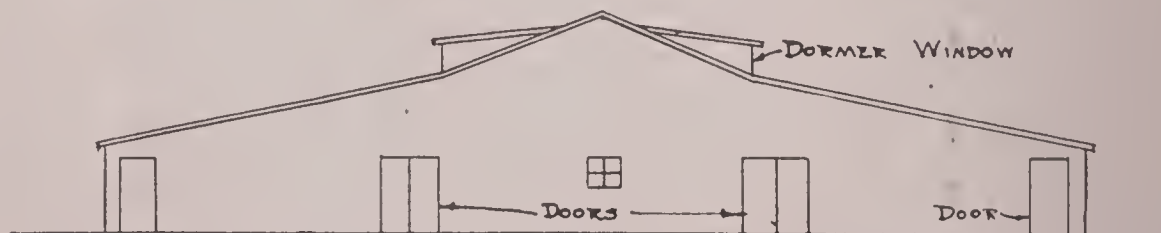
CROSS SECTION

FIG. 17



PORTION OF SIDE ELEVATION

FIG. 16

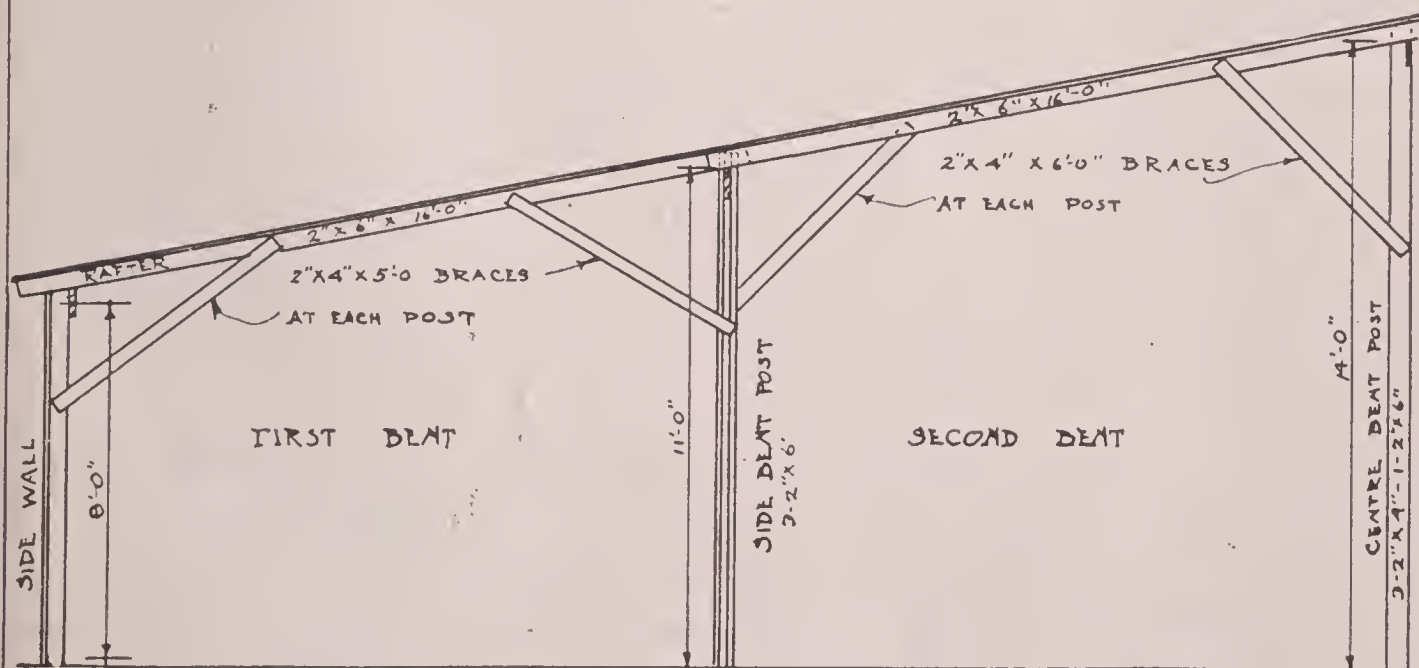
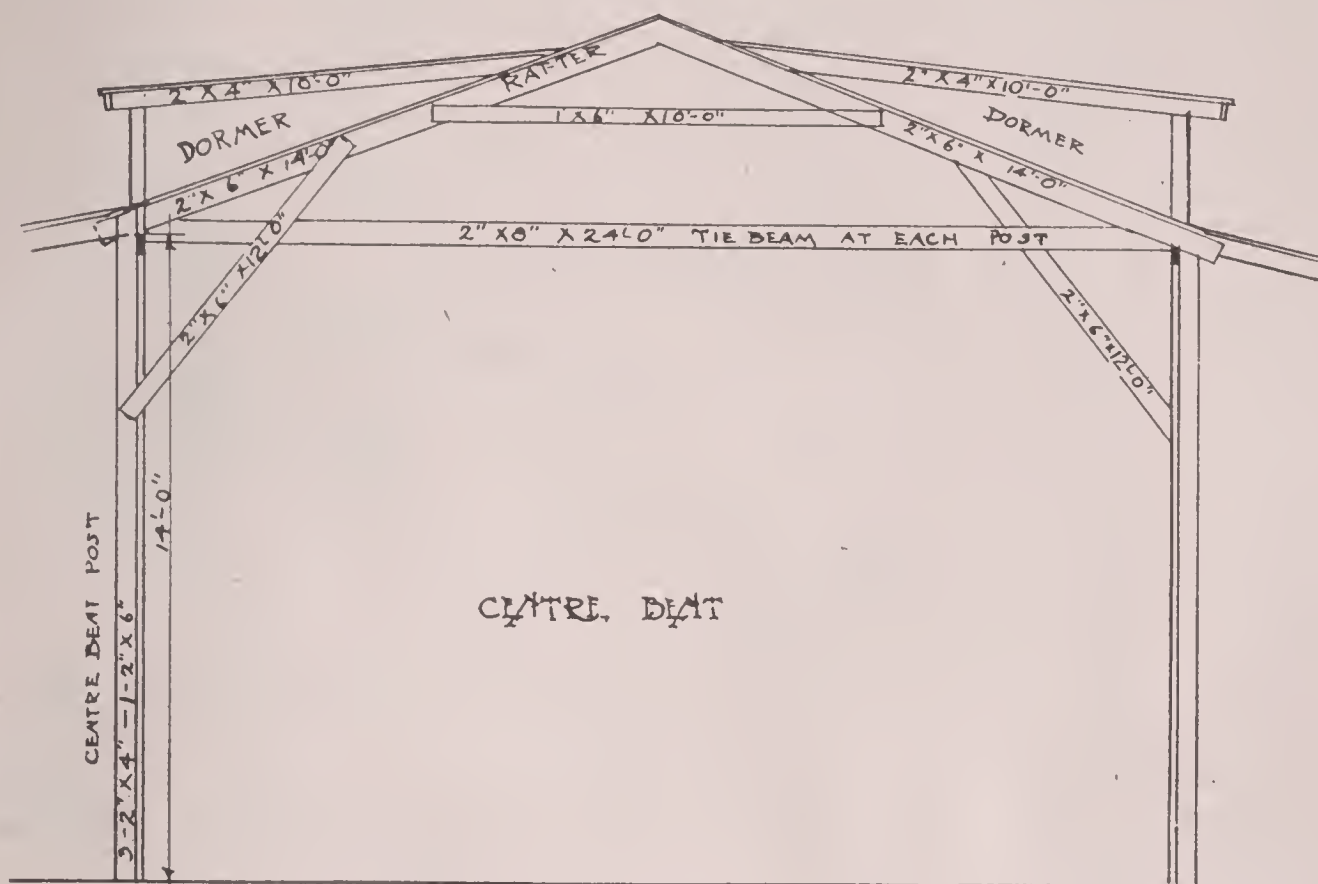


END ELEVATION

FIG. 15

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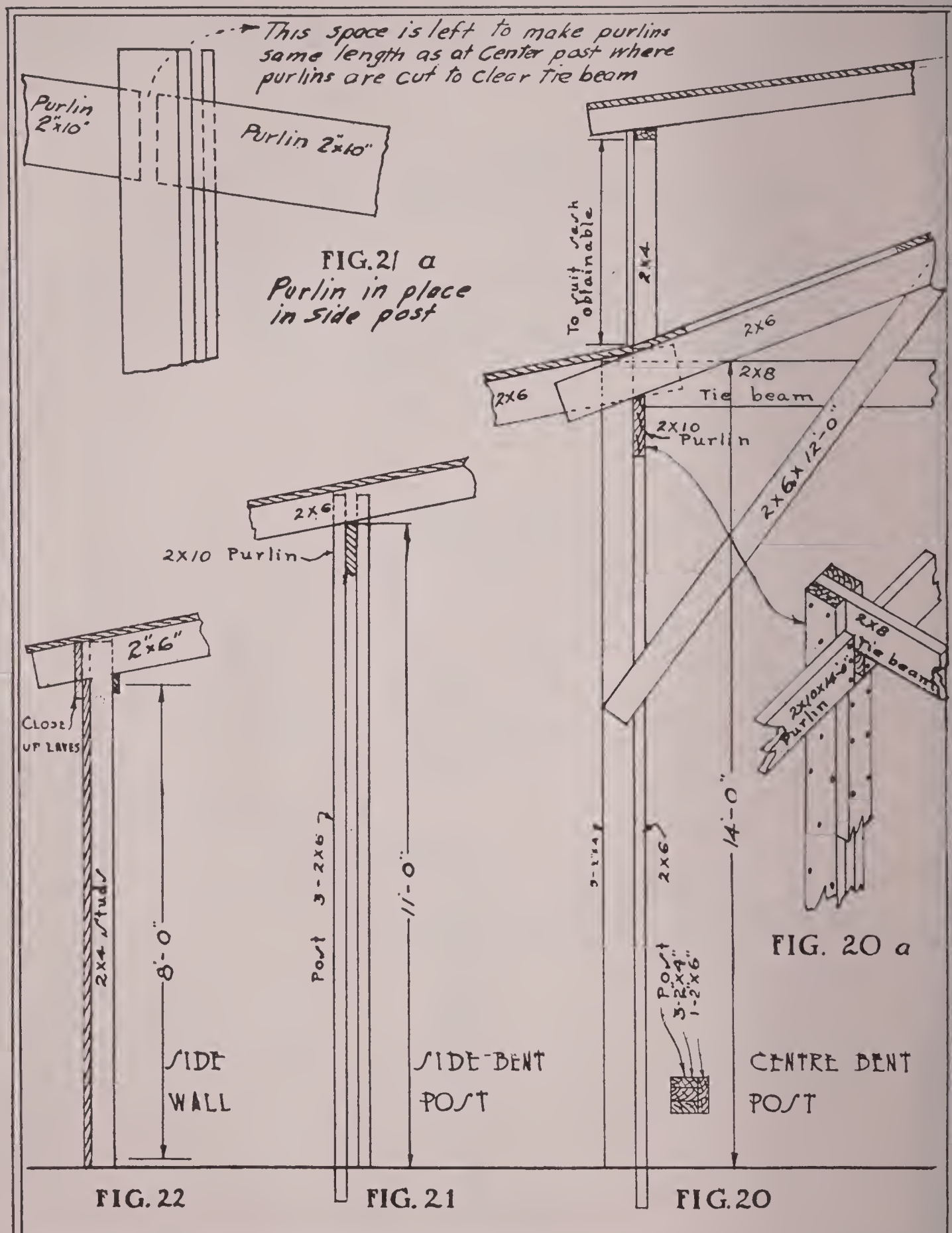
TABLERACLL 1650



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TABERNACLE 1650.



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 RELIANCE BLDG KANSAS CITY, MO.

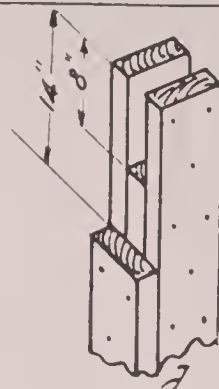
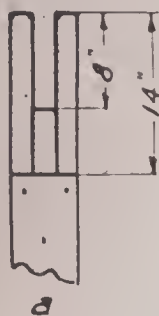


FIG. 23
TOP OF CENTER BENT POST

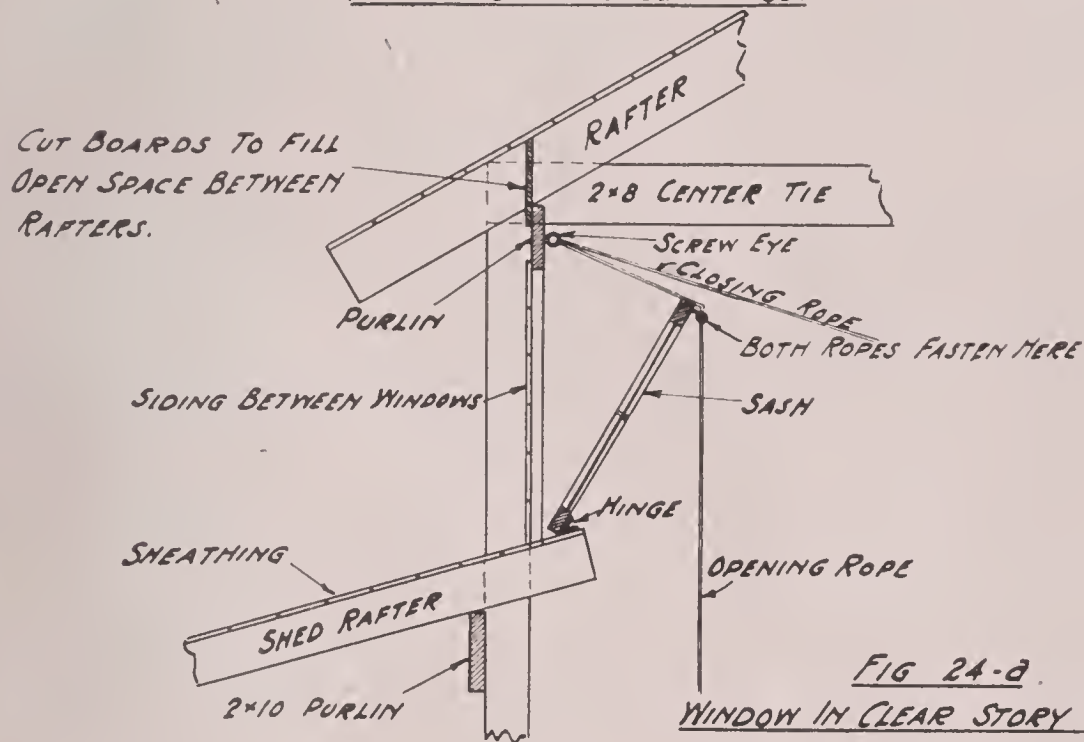


FIG 24-a.
WINDOW IN CLEAR STORY TYPE

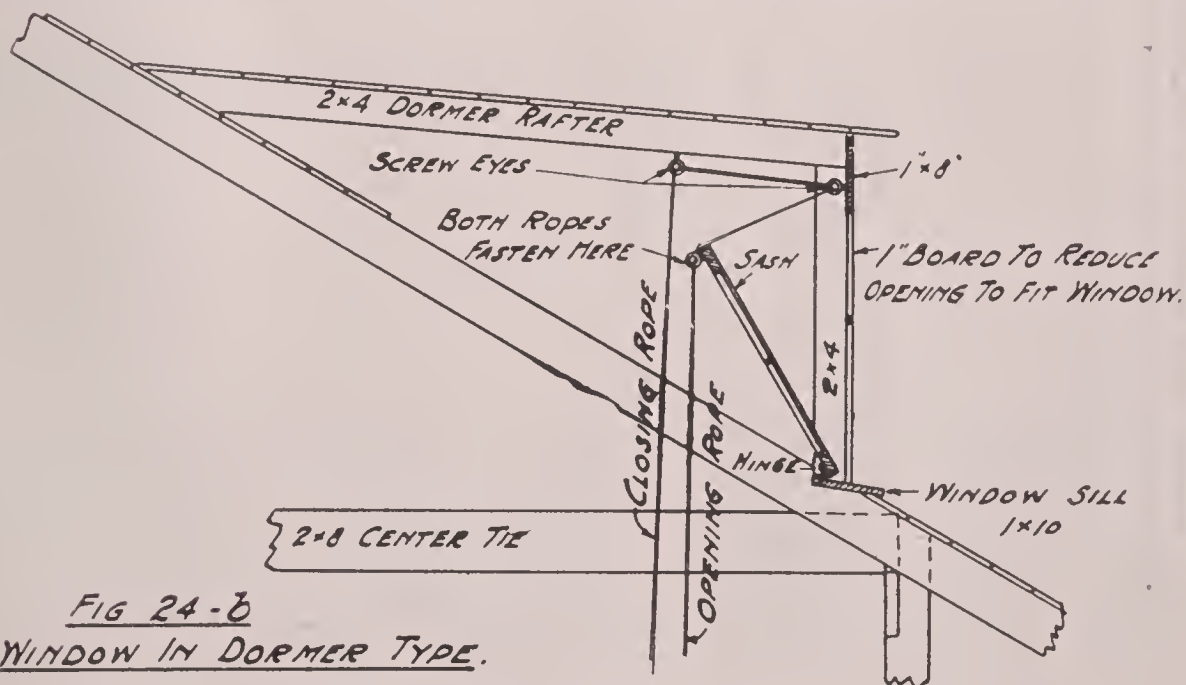
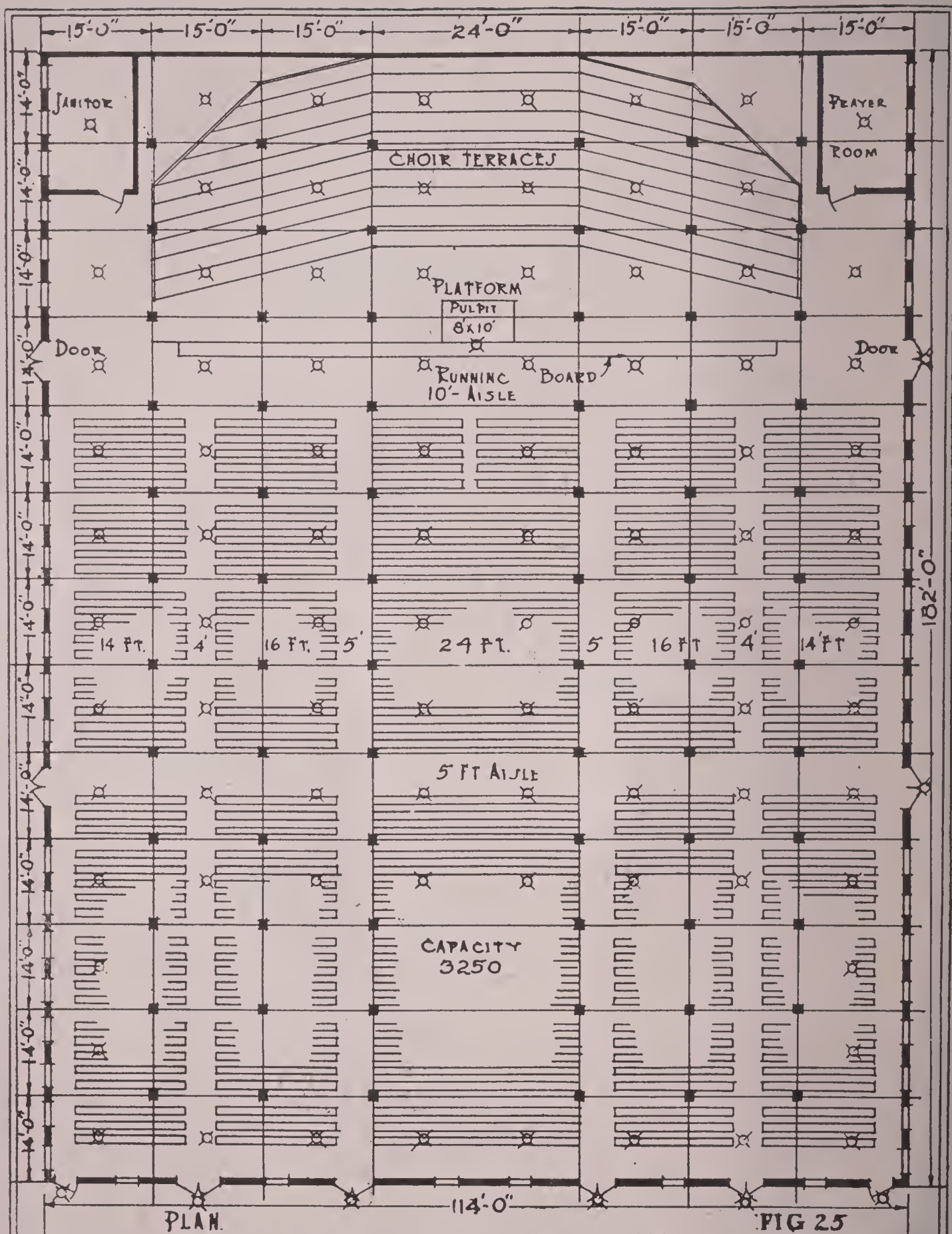
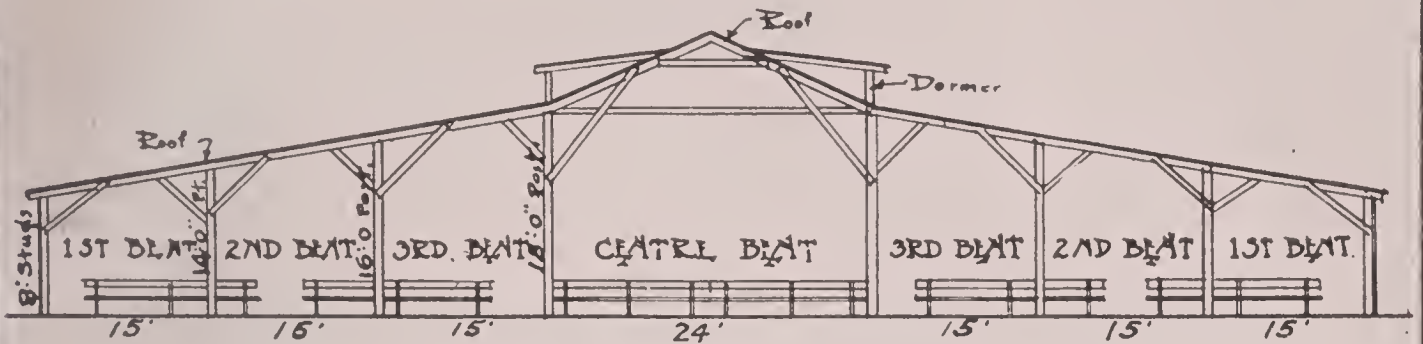


FIG 24-b
WINDOW IN DORMER TYPE.

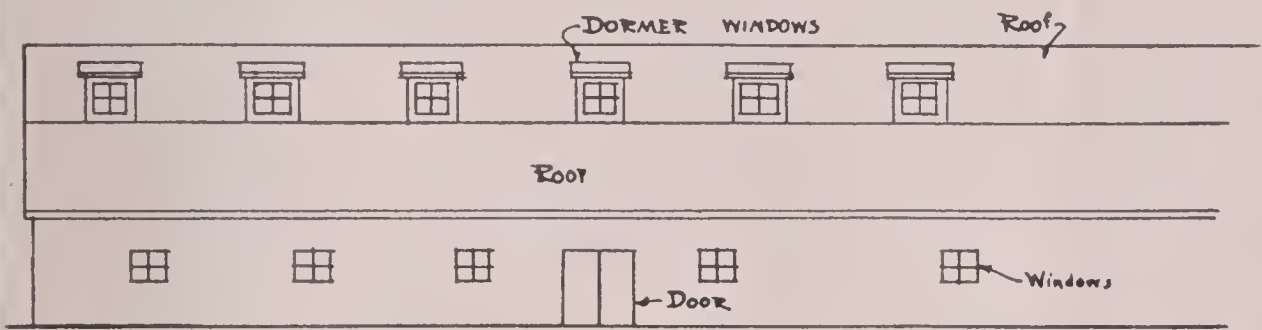


BROSTROM & DROTTS — ARCHITECTS TABERNACLE 3250
 RELIANCE B'LD'G KANSAS CITY MO.



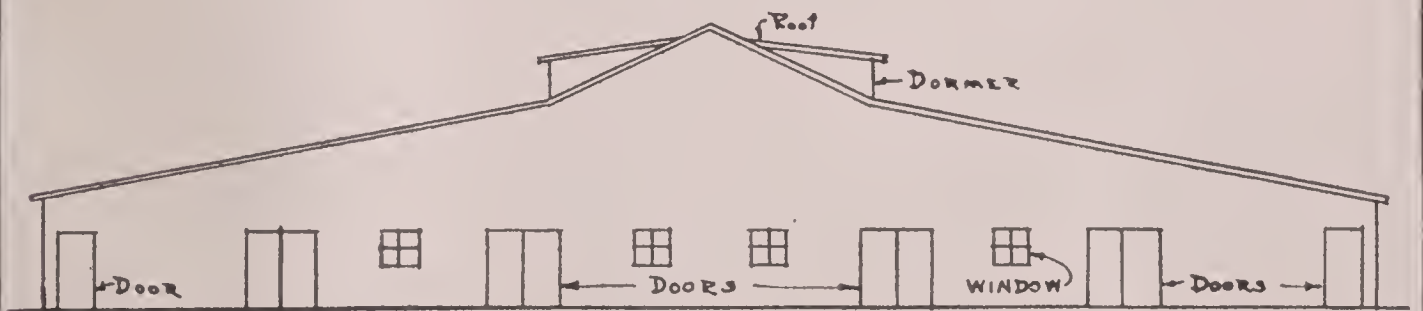
TRANSVERSE SECTION

FIG. 28



PORTION OF SIDE ELEVATION

FIG. 27.



END ELEVATION

FIG. 26

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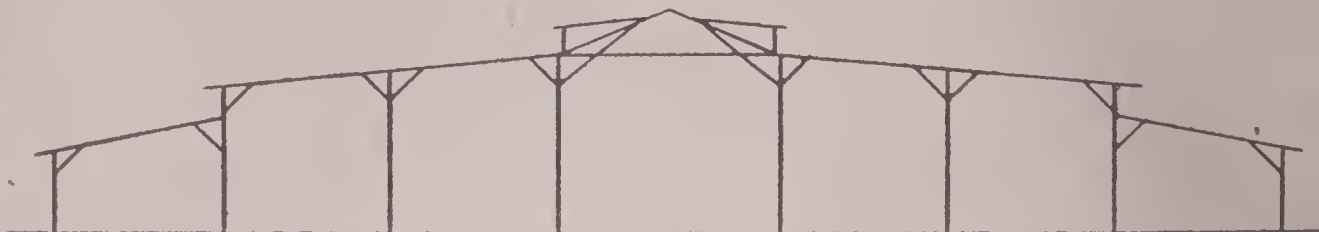


FIG. 29.

CROSS SECTION OF COMBINATION CLEAR STORY AND DORMER CONSTRUCTION
THIS TYPE IS RECOMMENDED FOR BUILDINGS SEATING 3500 AND OVER.

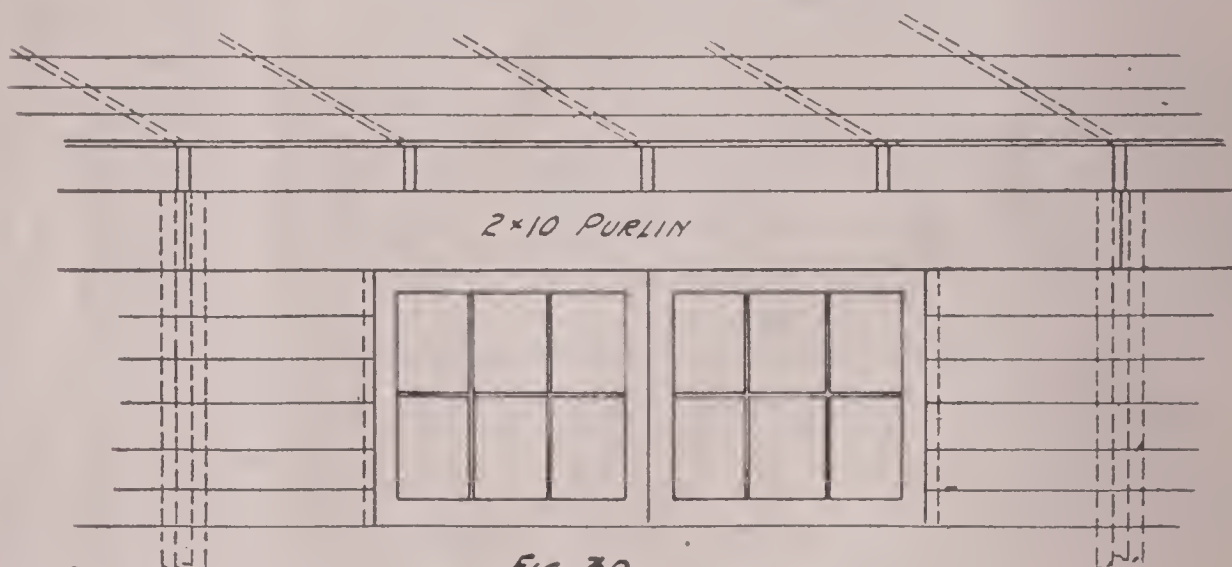


FIG 30.

MAKE OPENING TO FIT
 WINDOW OBTAINABLE

OUTSIDE VIEW OF WINDOW IN CLEAR STORY BUILDING.

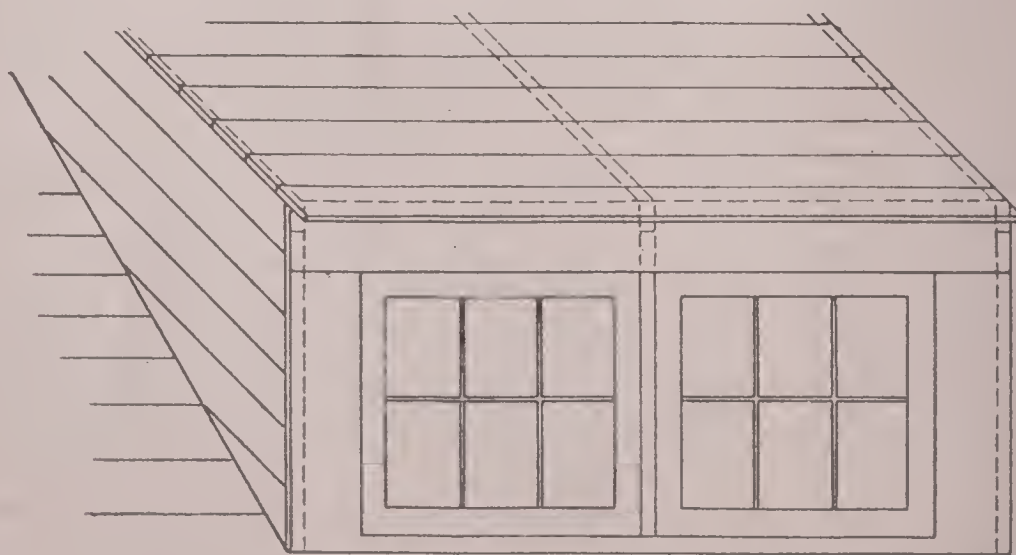
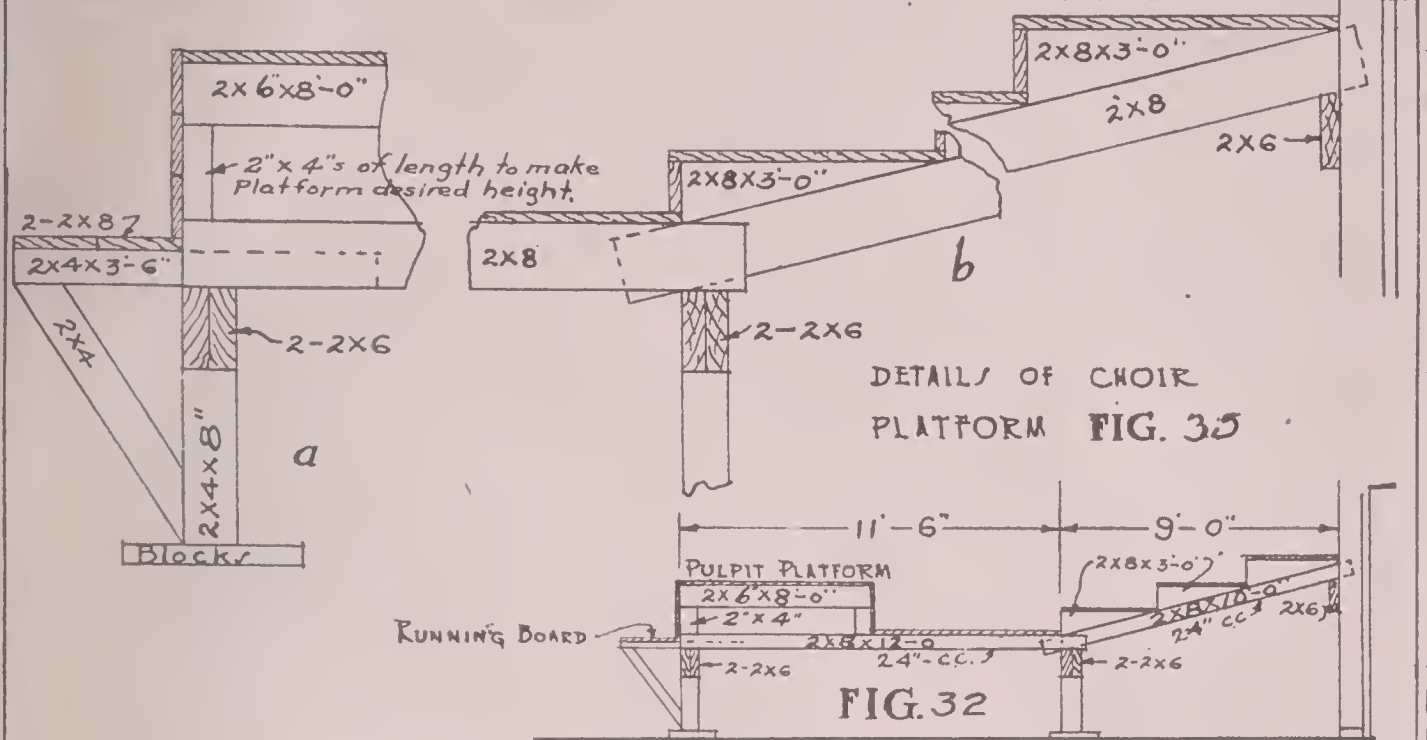
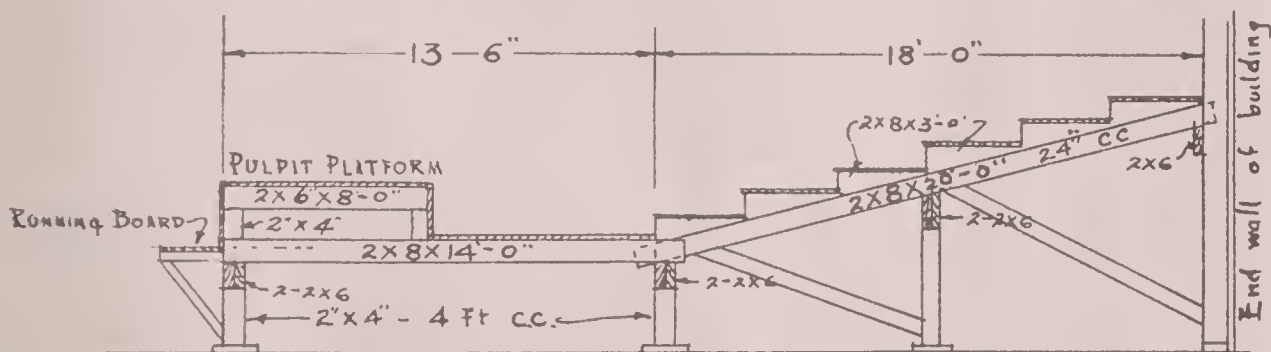


FIG 31.

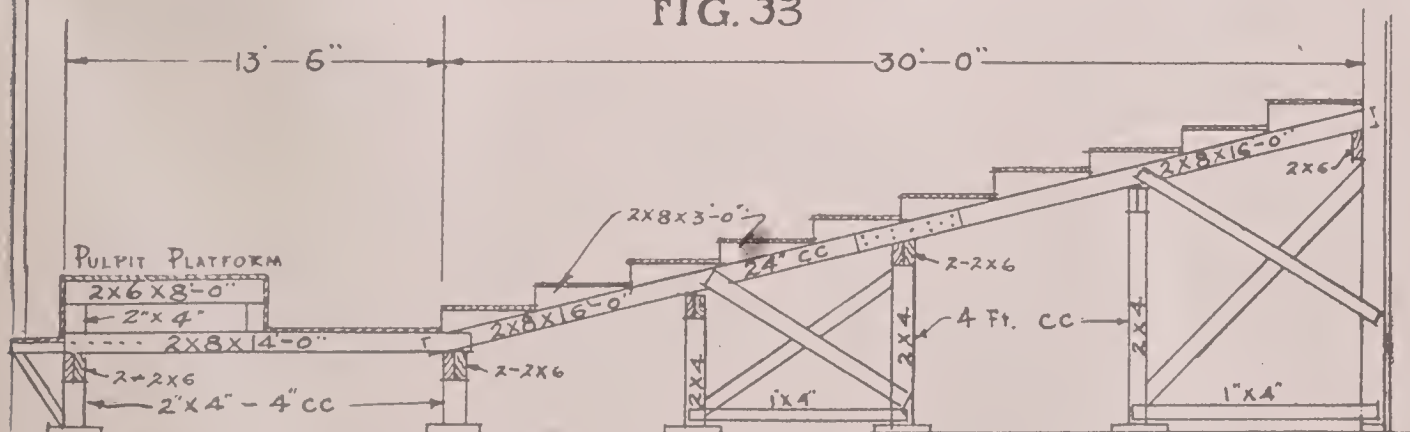
OUTSIDE VIEW OF DORMER STYLE.



CROSS SECTION OF PLATFORM WITH 3 TERRACES
The size for use in small tabernacles



CROSS SECTION OF PLATFORM WITH 6 TERRACES
The size for use in tabernacles of 1000 to 2500 capacity
FIG. 33



CROSS SECTION OF PLATFORM WITH 10 TERRACES
The size for use in tabernacle of 3000 to 4000 capacity
FIG. 34

BROSTROM & DROTTS - ARCHITECTS TABERNACLE CHOIR
RELIANCE BLDG KANSAS CITY, MO.

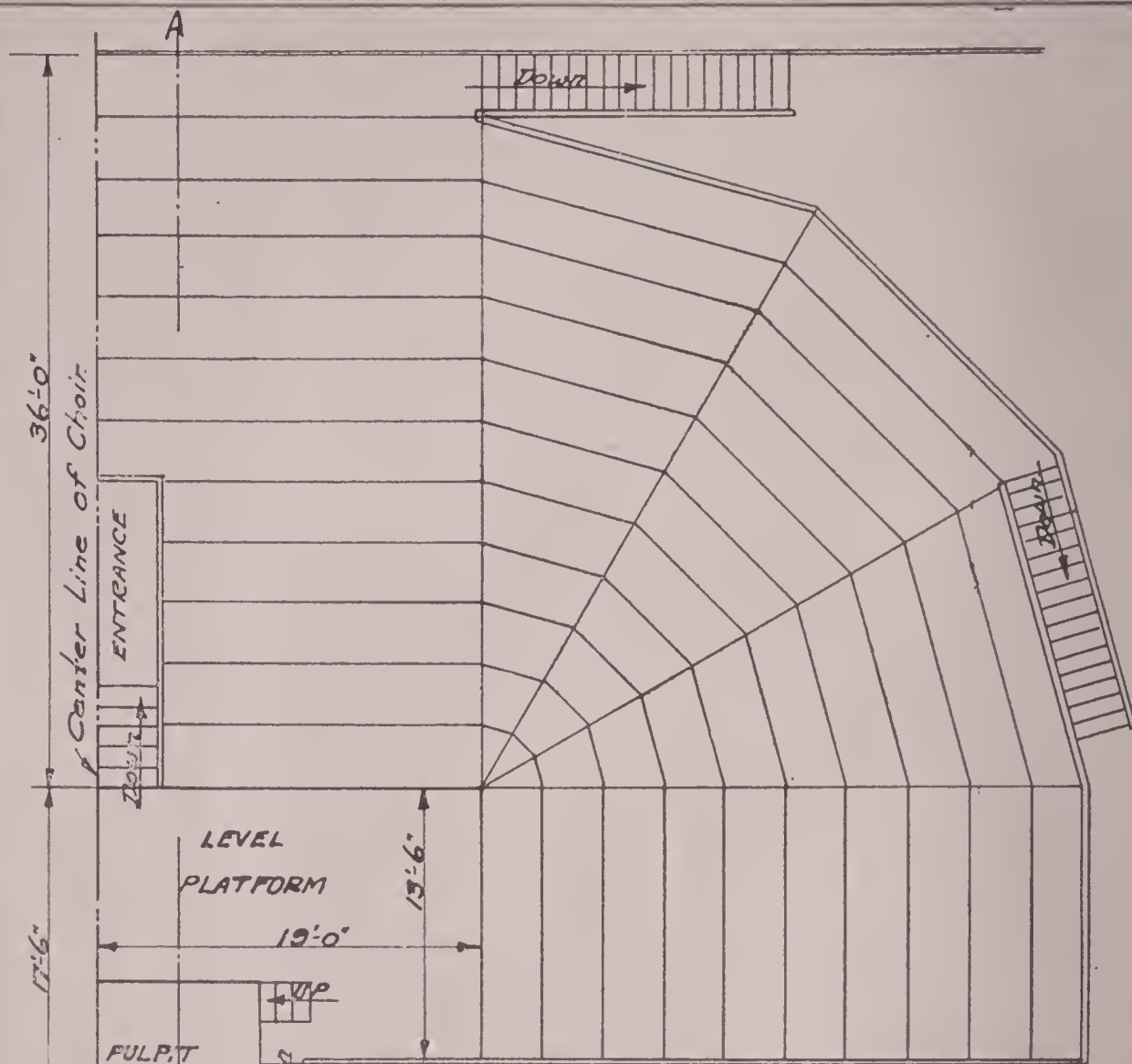
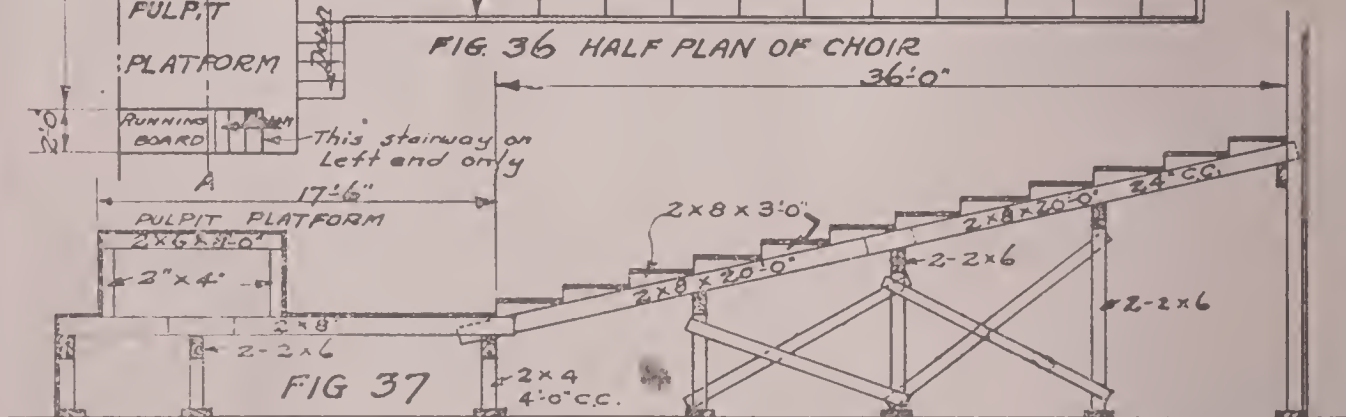


FIG. 36 HALF PLAN OF CHOIR
36'-0"



CROSS SECTION A-A OF PLATFORM WITH 12 TERRACES.
The size for use in Tabernacles of 4000 to 6000 Capacity.

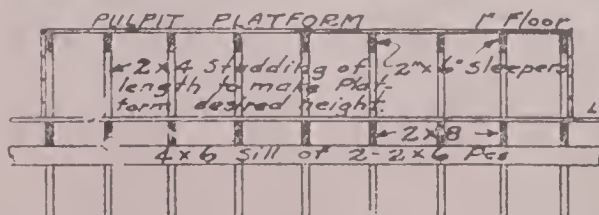
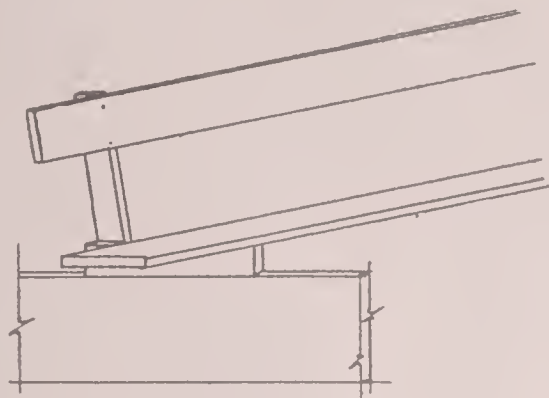
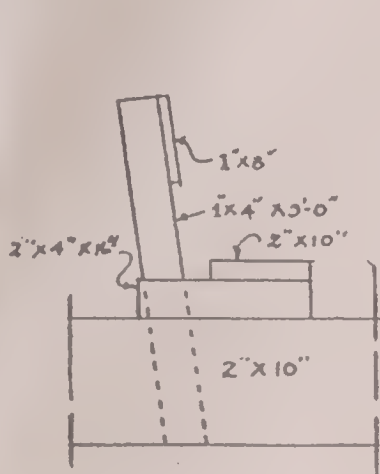
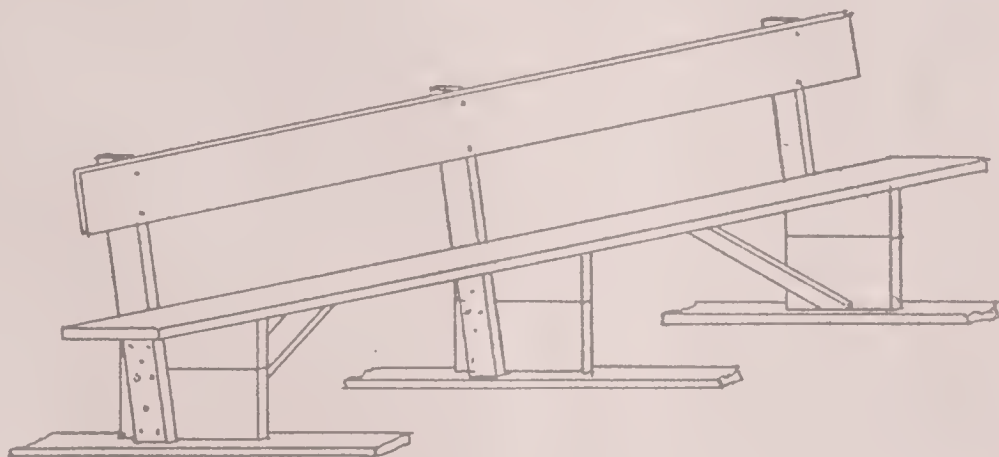
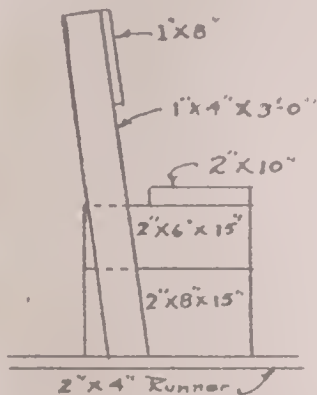


FIG. 38 FRAME WORK & CONSTR. OF SPEAKERS PLATFORM.

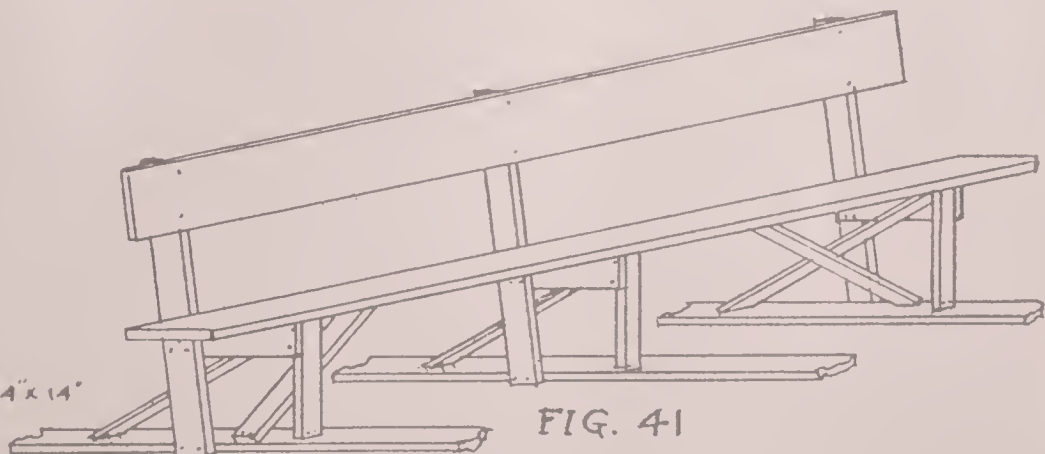
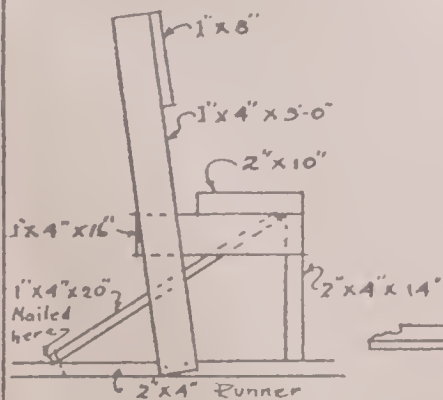
C. J. WOERNER - DESIGNING & CONSULTING ENGINEER
ROOM 3 - COLLINS BLOCK LIMA - OHIO
TABERNACLE CHOIR.



TRIANGLE TYPE
FIG. 39



BLOCK TYPE
FIG. 40



FRAMED TYPE

FIG. 41

BROSTROM & DROTTS - ARCHITECTS
RELIANCE BLD'G KANSAS CITY MO.

TABERNACLE STATS

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